

Helitowcart - DESIGN CHANGE REQUEST-ORDER (ECR/ECO)	F20-01	Page 1 of 3
Reviewed & approved by:	/	2006 09 09

#### A- REQUEST

ECR : —

ECO : 6

Nature of proposed change :	Add 3rd U clip as a safety measure to new enlarged pool for BP44.
Reason :	In case the rod gets stuck from the rear, to prevent it from damage.
Submitted By :	Lucien Barbeau from Commeut for Chastopac
Date :	2010.03.30

#### B- IMPACT ANALYSIS

Product Manager	I agree with suggestion. Signature : <u>D. Barbeau</u> /date : <u>2010.03.30</u>
Operation Manager	ok - I will update stocks + provide to current customers Signature : <u>D. Barbeau</u> /dat <u>2010.03.30</u>
Quality System Manager	ok / No change Signature : <u>D. Barbeau</u> /date : <u>2010.03.30</u>
Regulatory affairs Manager	ok / No change Signature : <u>D. Barbeau</u> /date : <u>2010.03.30</u>
Supplier A	— Signature : _____ /date : _____
Supplier B	— Signature : _____ /date : _____
Other	— Signature : _____ /date : _____

Helitowcart - DESIGN CHANGE REQUEST-ORDER (ECR/ECO)	F20-01	Page 2 of 3
Reviewed & approved by:	/	2006 09 09

### C- DECISION

Risk analysis	<p style="text-align: center;"><i>3rd U-clip.</i></p> <p>This device is designed to <del>especially</del> reduce risk of pod catching up on irregular terrain</p> <p>S. Ob.</p> <p>Signature: <u>D. Barlow</u> /date: <u>2006.03.30</u></p>	
---------------	---	--

Decision	<p><i>Go ahead</i></p> <p><u>D. Barlow</u> /date: <u>2006.03.30</u></p>	
----------	---	--

### D- ACTION PLAN

Action	Resp	Due date :	Verified by :
1) Submit proposed change to Mirko Zjela	DB	2010.03.30	DR
2) Get prototype made	DB/LB	2010.03.10	DR
3) Test prototype & validate with specialist	DB/LB	2010.03.07	DR
4) Submit doc. to Mirko Zjela for change	DB	2010.03.30	DR
5) Obtain change doc & Review <del>LB/MC</del> 2010.04.15	DR		
6) Get new batch of Low U-clips made <del>DR</del> 2010.04.20	DR		
7) Update update kits - fastock <del>for parts already in field</del> 2010.05.01	DB	2010.05.01	DR
Effective date :	Effective lot no :		

8) Update DMR & DTR	WB	2010.05.01	DR
---------------------	----	------------	----

Helitowcart - DESIGN CHANGE REQUEST-ORDER (ECR/ECO)	F20-01	Page 3 of 3
Reviewed & approved by:	/	2006 09 09

#### E- VERIFICATION

Verified Elements :	By/ date :
<p>verified parts &amp; assembled kits  the new low U-Clip meets the  spec as proposed plan.</p>	<p>DB</p> <p>290-05-03</p>

#### F- VALIDATION

Validated Elements :	By/ date :
<p>Change was submitted to Nitin Igela  and he confirmed that change is safe  and actually can improve safety  if pool gets caught on ground.</p>	<p>DB</p> <p>290-05-03</p>

#### G- CLOSURE

The change has been fully validated

I confirm that the designated change has been performed successfully :

Signature : D. Balasen /date: 2900503

## Traceability data

Qty	Part No.	Desc:	Lot number
19 PAIRS	112 0001 00D	BP44 STREAMLINE BEARPAW ASS'Y	HTC-LNF- 091210-01 HTC-LNF-yyymmdd-seq
Includes:			
	See attached excel chart for detailed list of components & lot numbers	LN-	
		LN-	

## Inspection Plan

Aspect	Sampling	Inspection	Acceptance parameters
A	100 %	PRESENCE OF ICEBLADES & FICER BLOCK.	
B	100 %	PRESENCE OF DOCUMENTS	
C	100 %	ALL LN FOR BATCH MATCH USED PARTS	
D	100 %	ALL COMPONENTS PRESENT & IN CORRECT QTY	
E	100 %	BOX APPROPRIATELY IDENTIFIED	
Inspection Plan approved by:			Date:

## Inspection Records

Ok = T+initials

Date:	Quantity	A	B	C	D	E	Notes
2009 12 10	19 PAIRS	OK	OK	OK	OK	OK	
2010 05 03	19 PAIRS						ADDED REAR LOW U-CLIP ON ALL PAIRS SEE ATTACHED RECORDS AS PER ECO #6/SENT KIT TO CUSTOMERS WHERE APPLICABLE.

## Release certificates issue

Release Certificates issued:	yes	no	By:	J. Dorian	Date: 09 12 10
------------------------------	-----	----	-----	-----------	----------------

Comments:

- RELEASE CERTIF. NOS : HTC-RC-091210-01 TO 19
- 2010 05 03 / REL. CERTIF VERSION "b" ISSUED FOR UNIT NO 01, 02, 03, 04, 06 THAT WERE ALREADY ON TERRAIN. SENT WITH OPTIONAL 3RD U-CLIP FOR REAR KIT. 1/PB / SEE ECO #6.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	HTC-LNF-091210-01	Qté par paire	Nb paires req	Qté totale pièces	Lot 1	Lot 2	Lot 3	Qty	Info	Qty	Info	Q_in	Qty tot	
<b>Rear filler block assy:</b>																																
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Bp pads STREAMLINE	314 0001 01 B	2	19	38	LN-091209-01			38				38	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Filler block REAR	314-0022-01 A	2	19	38	LN-091209-02			38				38	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Bolts AN4-13A	261 0004 17 A	4	19	76	L/N 66213/37961 4500089804			76				76	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Nuts	262 0001 17 A	4	19	76	API/4500068971 / L/N68222/716444			76				76	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Washers	263 0001 17 A	8	19	152	NAS1149F0463P/L/N 71070/U2947			152				152	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	<b>Iceblade Assy:</b>												152	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Iceblade assy	314 0002 15 A	4	19	76	L/N 090603-01			76				76	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Nuts	262 0001 17 A	8	19	152	API/4500068971 / L/N68222/716444			152				152	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Washers	263 0001 17 A	8	19	152	NAS1149F0463P/L/N 71070/U2947			152				152	
<b>Bags with parts for customer assy of Front U-Clips:</b>																																
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	U-Shaped Clips	314 0006 15 B	4	19	76	L/N-081202			76				76	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Slotted clip Supports	314 0007 15 B	8	19	152	L/N081201-06 / Batch 5			152				152	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Bolts AN4-16A	261 0003 17 A	4	19	76	API 4500006984 /L/N 58052/31582			48	API45000068519 / L/N66410/6472		28	76	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Bolts AN4-15A	261 0002 17 A	4	19	76	L/N10357// M&m //4500033156			76				76	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Nuts	262 0001 17 A	8	19	152	API/4500068971 / L/N68222/716444			148	API 68222/71644 -MS2144N4/45000		4	152	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Washers	263 0001 17 A	16	19	304	NAS1149F0463P/L/N 71070/U2947			160	NAS1149F0463P Lot71070/U2947		144	304	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Filler blocks 1/4"	314 0012 02 A	4	19	76	L/N091208-01			76				76	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Filler blocks 1/8"	314 0015 01 A	4	19	76	L/N090219-01			76				76	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Filler blocks 3/32"	314 0014 01 A	4	19	76	L/N090219-02			76				76	
<b>Bags with parts for customer assy of LOW REAR U-Clips:</b>																				LOW U-Shaped Clips	314 0023 15 A	2	19	38	LN-100430-01			38				38
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Bolts AN4-15A	261 0002 17 A	4	19	76	L/N10357// M&m //4500033156			76				76	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Slotted clip Supports	314 0007 15 B	4	19	76	L/N100315-01 / Batch 6			152				152	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Washers	263 0001 17 A	8	19	152	Airc.Spruce Can L/N40-15318 / P/Nar			152				152	
<b>Bags with Extra Filler Blocks &amp; Washers</b>	8	8	8	4	8	8	4	4	4	4	4	4	4	4	4	4	4	4	Filler blocks 1/8"	314 0015 01 A		19	100	L/N090219-01							100	
	4	4	4	4	8	4	4	8	8	8	8	8	8	8	8	8	8	8	Filler blocks 3/32"	314 0014 01 A		19	128	L/N090219-02							128	
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Washers	263 0001 17 A	8	19	152	Airc.Spruce Can L/N40-15318 / P/Nar			152				152	

S.B. 2020-05-03

## Action plan for Addition of 3rd U-Clip

Lot: 091210-01

Qty: 19 pairs

Boxes in Stock	Boxes in Stock - ISOLATED	Kits already delivered to customers
Qty: 12 Traceability number: 091210-07 091210-08 091210-09 091210-10 091210-11 091210-12 091210-13 091210-14 091210-15 091210-16 091210-17 091210-18	Qty: 2 091210-05 /Used for Tests 091210-19 / Used for Show	Qty: 5 pairs 091210-01 / F3185a Air Capitale 091210-02 / F3253 Capitale Helipro 091210-03/ F3253 Capitale Helipro 091210-04/ F3253 Capitale Helipro 091210-06/ F3404 Capital Heli Yukon
Parts Kits:  4x Bolts 15A 4x Slotted Clip Support 8x Washers 2x Low U-Shaped Clips 1x New MDL 1x New INST 314...	4x Bolts 15A 4x Slotted Clip Support 8x Washers 2x Low U-Shaped Clips 1x New MDL 1x New INST 314...	4x Bolts 15A 4x Slotted Clip Support 8x Washers 2x Low U-Shaped Clips 1x New MDL 1x New INST 314...  + 1x Introduction Letter 1x Release Certificate 1x Copy of applicable invoice 1x New MDL 1x New INST 314...
+ Spare Filler blocks & Washers 8x Washers 4x 1/8" Filler block 8x 3/32" filler block	+ Spare Filler blocks & Washers 8x Washers 4x 1/8" Filler block 8x 3/32" filler block	+ Spare Filler blocks & Washers 8x Washers 8x 1/8" Filler block 4x 3/32" filler block

*JDR*  
2010.05.03

**EXTRA FILLER BLOCKS & WASHERS**

ECO Record	DHR	DMR
Complete ECO form Add this action plan to record	Create receiving inspection form for New Low U shaped clip Create additional page for final lot, with all info regarding this addition Create Additional Release certificates for the kits to send to customers in field	Update Paper DMR Update Electronic DMR

By: D.Barker  
 Date: 2010.05.03

May 5<sup>th</sup>, 2010

**Object:**           **BearPaws BP44 - Offer of Rear 3<sup>rd</sup> U-Clips.**

To whom concerned,

Following our issue of our Larger Pad Streamlined BearPaws for the R44, a customer suggested that we benefit from the existing holes made for the support filler block to add a 3<sup>rd</sup> U-Clip at rear for easy additional safety.

We thought the idea brilliant and have decided to proceed with an engineering change to allow users to add it to their bearpaws.

We also decided to offer the benefits from this initiative to our customers already in possession of these products. This is why this package includes a parts kit, an updated Master Document List, an updated Assembly Instruction and a Release certificate for this kit.

Rest assured that your bearpaws as they have been installed with two U-clips are still very safe. The design had been approved by a Transport Canada Approved Aeronautics Engineer for a larger pad with two U-clips. So the pads may be left as is if you prefer so.

Should you require further information, do not hesitate to contact us.

We hope you enjoy your Helitowcart BearPaws!

Kind Regards,

Nathalie Barbeau,  
VP Commercial Affairs & Quality Management Director  
Helitowcart

En stock:

- ajouter au sac de boulons, tous les mercenaires suivants :
- remplacer le document
- ▲ HDI... "Master Doc. list" Rev. B  
par celui Rev. C

et

- l'insheetion d'installations  
314-0011-004 Rev C  
par celui Rev D

déjà vendue

- faire enveloppes avec ceci, aux clients suivants:



Batch H+C-RC-09 12.10 - xx

F3185a x 1  
F3253 x 3  
F3404 x 1

Sté:  
4  
4

8

2



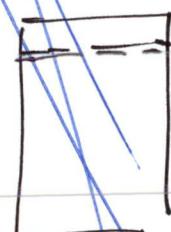
0



18 tifs



+

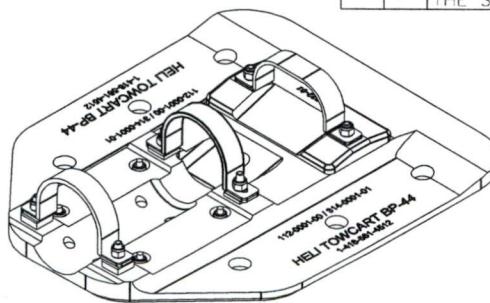
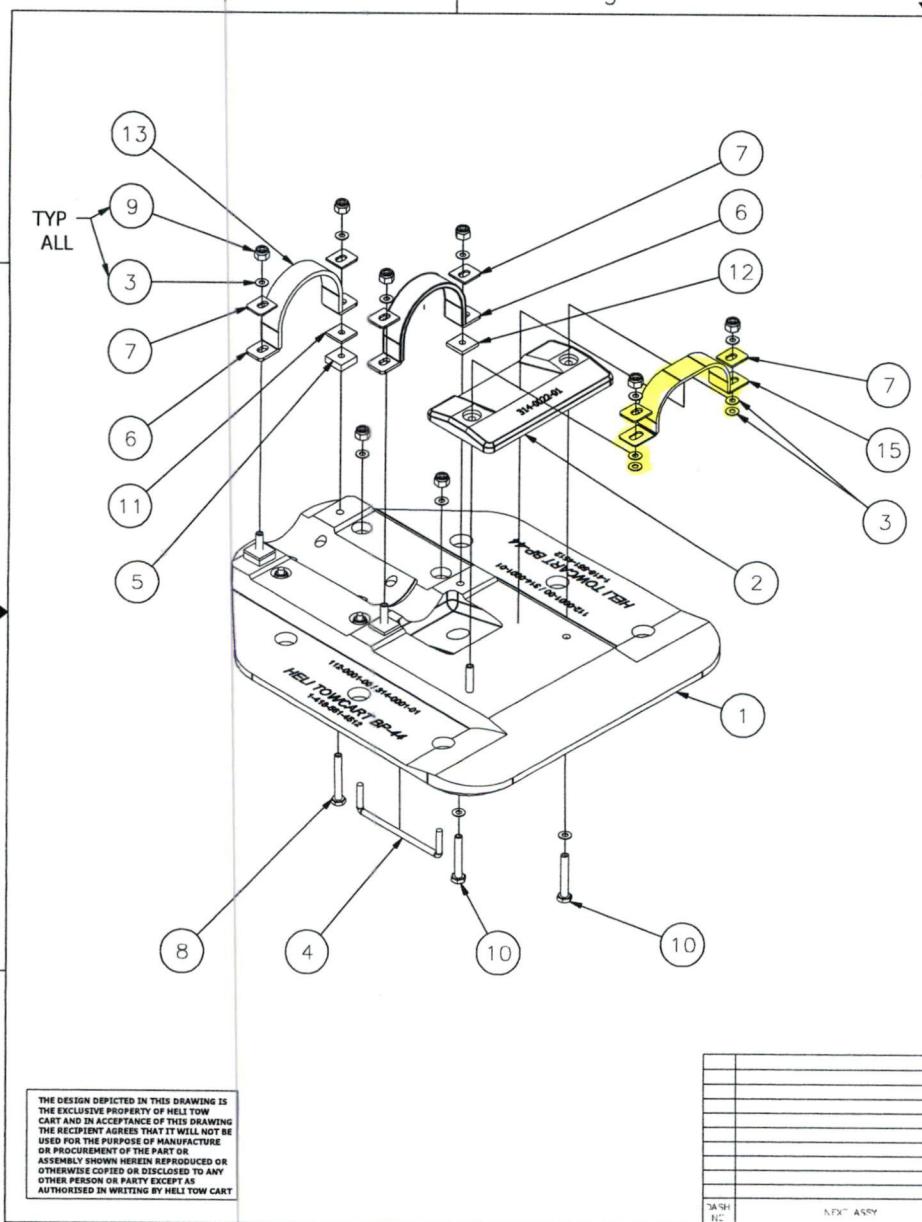


AT

↓

**TABLE OF CONTENTS:**

<b>INTRODUCTION</b>	<b>p.2</b>
Scope	p.2
General	p.2
Helicopter Effectivity	p.2
Installer Responsibilities	p.3
<b>INSTALLATION</b>	<b>p.3</b>
BearPaw Installation	p.3
BearPaw Removal	p.5
Weight & Balance	p.5
Parts List	p.5
<b>INSPECTION</b>	<b>p.6</b>
Life Limited Items	p.6
Pre-Flight	p.6
Periodic Inspection Schedule	p.6
500 Hour or Yearly Inspection Details	p.6
Overhaul Requirements	p.6
<b>REVISIONS &amp; APPROVAL</b>	<b>p.7</b>
Annex A (BearPaw Assembly Drawing)	
Annex B (BearPaw Pad Drawing)	



ISO  
SCALE 1 / 4

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SIZL
15	1	314 0023	BEARPAW U SHAPED CLIP REAR	STEEL	
13	3	314 0016	BEARPAW SHRINK 1X5	RUBBER	
12	2	314 0015	BEARPAW FILLER BLOCK 1/8	UHMW	1/8
11	2	314 0014	BEARPAW FILLER BLOCK 3/32	UHMW	3/32
10	4	281 0002	BOLT AN4 15A	STEEL	1/4
9	10	282 0001	NUT MS20 365 428	STIFI	1/4
8	2	281 0003	BOLT AN4 17A	STEEL	1/4
7	6	314 0007	BEARPAW SLOTTED CLIP SUPPORT	STIFI	
6	2	314 0006	BEARPAW U SHAPED CLIP	STEEL	
5	2	314 0012	BEARPAW FILLER BLOCK 1/4	UHMW	1/4
4	2	314 0005	BEARPAW ICE BLADE ASSEMBLY	STEEL	
3	20	283 0001	WASHER AN960 416	STEEL	1/4
2	1	314 0022	BEARPAW FILLER BLOCK REAR	UHMW	1/2
1	1	314 0001	BEARPAW PAD	UHMW	

DASH NO.	NEXT ASSY	REV H/M	MOD/F
		A2-1	

UNLESS OTHERWISE SPECIFIED	DRAWN: S. BERNER	15/04/2013
IMPRINTING: API IN INCHES	DESIGNED: S. BERNER	15/04/2013
INCHES	PRINTED: S. BERNER	15/04/2013
MM	CHECKED: S. BERNER	15/04/2013
ANG. LIN: 0.0000 - 0.0000	STRESS:	
ALL SURFACES ✓	ALL SURFACES ✓	
WITNESS:	WITNESS:	
REVIEWED:	REVIEWED:	
APPROVED:	APPROVED:	
APPROV'D BY: M. ZGF A	APPROV'D BY: M. ZGF A	APPROV'D BY: M. ZGF A
DATE: 15/04/2013	DATE: 15/04/2013	DATE: 15/04/2013
DRAWING NO.: B 112-0001-00-E	DRAWING NO.: B 112-0001-00-E	DRAWING NO.: B 112-0001-00-E
SCALE: 1:4	SCALE: 1:4	SCALE: 1:4
1	1	1

**OHELI**  
**TOW CART**

**BEARPAW**  
**STREAMLINE ASSEMBLY**

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE DESIGNER AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY. NO PARTS OR ASSEMBLIES PRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

IN REFERENCE TO:



**Bon Expédition**

Date: 4 janvier 2010

Facture: 3185

Facturer à: M. Lucien Barbeau  
Air Capitale Inc.  
860 Marie-Victorin  
St-Nicolas, Qc G7A 3S9

Expédier à:

tel:  
fax:  
email:

Contact:  
Tel:

NAFTA 120493044	Termes net 10 days	Helitowcart 877A Alphonse-Desrochers St-Nicolas, Levis, Qc, Canada, G7A 5K6 <a href="mailto:info@helitowcart.com">info@helitowcart.com</a> tel. +1 418 561 4512 <a href="http://www.helitowcart.com">www.helitowcart.com</a> fax. +1 418 836 4575	Poids 5 lbs	Dimension 17" x 13" x 3"
<b>Bond</b> 990458243	<b>No bon achat</b>			
<b>Courtege</b>	<b>Agent</b> Nathalie Barbeau		<b>Transport</b> L. Barbeau	<b>Date Expéd.</b> 2009 10 15

Quantité	Description	Devise	\$CAN
		Prix unitaire	Montant
1	<i>Produits faits au Canada</i> BP44 Bear paws Streamlined		\$0.00
<i>Merci!</i>			
		Sous total	\$0.00
		Expédition	\$0.00
		TPS	\$0.00
		TVQ	\$0.00
		Total	\$0.00

IN REFERENCE TO:



Packing Slip

Date: March 11, 2010

Ref: 3404

Bill to: Capital Helicopters (1995) inc  
3-25 Pilgrim Place  
Whitehorse, Yukon Territory  
Canada, Y1A 6E6

Ship to: Madonna Helicopters  
RR 2  
Airdrie, Alberta  
Canada, T4B 1A4

Contact: Mr Delmar Washington  
Tel: 867 668 6200  
fax:  
cell:  
email: [capitalheli@northwestel.net](mailto:capitalheli@northwestel.net)

Contact: Roger Hogan  
Tel: 403 948 0968  
Fax: 403 948 4338  
email: [rhoghan@madheli.com](mailto:rhoghan@madheli.com)  
email: [roger.hogan@madheli.com](mailto:roger.hogan@madheli.com)

NAFTA 120493044	Terms Visa	Issued by: Helitowcart 877A Alphonse-Desrochers St-Nicolas, Levis, Qc, Canada, G7A 5K6 <a href="mailto:info@helitowcart.com">info@helitowcart.com</a> tel. +1 418 561 4512 <a href="http://www.helitowcart.com">www.helitowcart.com</a> fax. +1 418 836 4575	Weight 7lbs	Dimension 16.5"x13"x3.25"	
Bond 990458243	Order verbal		Shipping Dicom	Due Date March 16th, 2010	
Broker	Agent Lucien Barbeau		Currency Can\$	Unit price Total	
Quantity	Description				
1	BP44 BearPaws				
<i>Products Made in Canada Thank you!</i>					
<b>Notes:</b>				Sub Total Shipping GST PST Total	

IN REFERENCE TO:



**Bon Expédition**

Date: 4 janvier 2010

Facture: 3253

Facturer à: M. Danny Ricard  
**Capitale Hélipro Service**  
230 D- 2e avenue  
Aéroport Jean Lesage  
Québec, Qc G2G 2T2

Expédier à:

tel: 418 871-4466  
fax: 418 871-7170  
email: [dricard@capitalehelipro.com](mailto:dricard@capitalehelipro.com)

Contact:

Tel:

NAFTA 120493044	Termes net 10 days	Helitowcart 877A Alphonse-Desrochers St-Nicolas, Levis, Qc, Canada, G7A 5K6 <a href="mailto:info@helitowcart.com">info@helitowcart.com</a> tel. +1 418 561 4512 <a href="http://www.helitowcart.com">www.helitowcart.com</a> fax. +1 418 836 4575	Poids 15 lbs	Dimension 3 x 13" x 11" x3"
<b>Bond</b> 990458243	<b>No bon achat</b>			
<b>Courtage</b>	<b>Agent</b> Lucien Barbeau		<b>Transport</b> Lucien Barbeau	<b>Date Expéd.</b> Janvier 2010

Quantité	Description <i>Produits faits au Canada</i>	Devise	\$CAN
		Prix unitaire	Montant
3	BP44 Bear paws (1 paire)		
<b>Merci!</b>			
		Sous total	\$0.00
		Expédition	\$0.00
		TPS	\$0.00
		TVQ	\$0.00
		Total	\$0.00

## Authorized Release Certificate

1. Approving National Aviation Authority / Country <b>Transport Canada</b>		2. Authorized Release Certificate <b>Form One</b>		3. Form Tracking No. <b>HTC-RC091210-01b</b>	
4. Approved Organization Name & Address: <b>Helitowcart (Vanair inc.) 860, St-Nicolas, Levis, Quebec, Canada G7A 5K6</b>		5. Work Order/Contract/Invoice <b>Invoice 3185a Lucien Barbeau, Air Capitale, Québec.</b>			
6. Item	7. Description	8. Part no.	9. Qty	10. Serial / Lot no.	11. Status / work
1	Helitowcart - BP44 BearPaw	HTC-MDL-BP-44-1000 112-0001-00	2	HTC-LNF-091210-01	New
2	Low Rear U-Clip	314-0023-15-A	2	LN-100430-01	New
3	Bolts AN4-15A	261-0002-17-A	4	L/N 10357	New
4	Slotted Clip Supports	314-0007-15-B	4	L/N100315-01	New
5	Washers	263-0001-17-A	8	L/N40-15318	New
12. Remarks					
Canada: United States	Transport Canada Approved manufacturer no 27-06, Transport Canada STC no. SH06-24 FAA STC no. SR02432NY				
13a. Certifies that the items identified above were manufactured in conformity to:		<input checked="" type="radio"/> Approved design data and are in condition for safe operation <input type="radio"/> Non approved design data specified in block 12.		14a. Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12 has been performed in compliance with the Canadian Aviation Regulations <input type="radio"/> CAR 571.10 Maintenance release. <input type="radio"/> Other regulation specified in block 12.	
13b. Signature 	13c. Approved Organization Number Inspector no: 001 / STC no SH06-24 Approved manufacturer no 27-06		14b. Signature	14c. Approved Organization Number	
13d. Name Nathalie Barbeau, Quality Manager	13e. Date (dd/mm/yyyy) 03/05/2010		14d. Name	14e. Date (dd/mm/yyyy)	

Ref: Transport Canada: Form One

- 1- This document does not constitute authority to install the part.
- 2- Installers working in accordance with the national regulations of a country other than that specified in block 1 must ensure that their regulations recognize certifications from the country specified.
- 3- Statements 13a & 14a do not constitute installation certification. In all cases the technical record for the aircraft must contain an installation certification issued in accordance with the applicable national regulations before the aircraft may be flown

## Authorized Release Certificate

1. Approving National Aviation Authority / Country Transport Canada		2. Authorized Release Certificate Form One			3. Form Tracking No. HTC-RC091210-02b
4. Approved Organization Name & Address: Helitowcart (Vanair inc.) 860, St-Nicolas, Levis, Quebec, Canada G7A 5K6		5. Work Order/Contract/Invoice  Invoice 3253 Dany Ricard, Capitale Helipro Service, Québec.			
6. Item	7. Description	8. Part no.	9. Qty	10. Serial / Lot no.	11. Status / work
1	Helitowcart - BP44 BearPaw	HTC-MDL-BP-44-1000 112-0001-00	2	HTC-LNF-091210-01	New
2	Low Rear U-Clip	314-0023-15-A	2	LN-100430-01	New
3	Bolts AN4-15A	261-0002-17-A	4	L/N 10357	New
4	Slotted Clip Supports	314-0007-15-B	4	L/N100315-01	New
5	Washers	263-0001-17-A	8	L/N40-15318	New
12. Remarks					
Canada: Transport Canada Approved manufacturer no 27-06, Transport Canada STC no. SH06-24 United States FAA STC no. SR02432NY					
13a. Certifies that the items identified above were manufactured in conformity to: <input checked="" type="radio"/> Approved design data and are in condition for safe operation		14a. Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12 has been performed in compliance with the Canadian Aviation Regulations <input type="radio"/> CAR 571.10 Maintenance release <input type="radio"/> Other regulation specified in block 12.			
13b. Signature 		13c. Approved Organization Number Inspector no: 001 / STC no SH06-24 Approved manufacturer no 27-06			
13d. Name Nathalie Barbeau, Quality Manager		13e. Date (dd/mm/yyyy) 04/01/2010			
		14b. Signature			
		14c. Approved Organization Number			
		14d. Name			
		14e. Date (dd/mm/yyyy)			

Ref: Transport Canada: Form One

- 1- This document does not constitute authority to install the part.
- 2- Installers working in accordance with the national regulations of a country other than that specified in block 1 must ensure that their regulations recognize certifications from the country specified.
- 3- Statements 13a & 14a do not constitute installation certification. In all cases the technical record for the aircraft must contain an installation certification issued in accordance with the applicable national regulations before the aircraft may be flown

## Authorized Release Certificate

1. Approving National Aviation Authority / Country Transport Canada		2. Authorized Release Certificate Form One		3. Form Tracking No. HTC-RC091210-03b	
4. Approved Organization Name & Address: Helitowcart (Vanair inc.) 860, St-Nicolas, Levis, Quebec, Canada G7A 5K6		5. Work Order/Contract/Invoice  Invoice 3253 Dany Ricard, Capitale Helipro Service, Québec.			
6. Item	7. Description	8. Part no.	9. Qty	10. Serial / Lot no.	11. Status / work
1	Helitowcart - BP44 BearPaw	HTC-MDL-BP-44-1000 112-0001-00	2	HTC-LNF-091210-01	New
2	Low Rear U-Clip	314-0023-15-A	2	LN-100430-01	New
3	Bolts AN4-15A	261-0002-17-A	4	L/N 10357	New
4	Slotted Clip Supports	314-0007-15-B	4	L/N100315-01	New
5	Washers	263-0001-17-A	8	L/N40-15318	New
12. Remarks					
Canada: Transport Canada Approved manufacturer no 27-06, Transport Canada STC no. SH06-24 United States FAA STC no. SR02432NY					
13a. Certifies that the items identified above were manufactured in conformity to:		<input checked="" type="radio"/> Approved design data and are in condition for safe operation <input type="radio"/> Non approved design data specified in block 12.		14a. Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12 has been performed in compliance with the Canadian Aviation Regulations <input type="radio"/> CAR 571.10 Maintenance release. <input type="radio"/> Other regulation specified in block 12.	
13b. Signature 		13c. Approved Organization Number Inspector no: 001 / STC no SH06-24 Approved manufacturer no 27-06		14b. Signature	
13d. Name Nathalie Barbeau, Quality Manager		13e. Date (dd/mm/yyyy) 04/01/2010		14c. Approved Organization Number	
13d. Name		13e. Date (dd/mm/yyyy)		14d. Name	
				14e. Date (dd/mm/yyyy)	

Ref: Transport Canada: Form One

- 1- This document does not constitute authority to install the part.
- 2- Installers working in accordance with the national regulations of a country other than that specified in block 1 must ensure that their regulations recognize certifications from the country specified.
- 3- Statements 13a & 14a do not constitute installation certification. In all cases the technical record for the aircraft must contain an installation certification issued in accordance with the applicable national regulations before the aircraft may be flown

## Authorized Release Certificate

1. Approving National Aviation Authority / Country Transport Canada		2. Authorized Release Certificate Form One		3. Form Tracking No. HTC-RC091210-04b	
4. Approved Organization Name & Address: Helitowcart (Vanair inc.) 860, St-Nicolas, Levis, Quebec, Canada G7A 5K6		5. Work Order/Contract/Invoice  Invoice 3253 Dany Ricard, Capitale Helipro Service, Québec.			
6. Item	7. Description	8. Part no.	9. Qty	10. Serial / Lot no.	11. Status / work
1	Helitowcart - BP44 BearPaw	HTC-MDL-BP-44-1000 112-0001-00	2	HTC-LNF-091210-01	New
2	Low Rear U-Clip	314-0023-15-A	2	LN-100430-01	New
3	Bolts AN4-15A	261-0002-17-A	4	L/N 10357	New
4	Slotted Clip Supports	314-0007-15-B	4	L/N100315-01	New
5	Washers	263-0001-17-A	8	L/N40-15318	New
12. Remarks					
Canada:	Transport Canada Approved manufacturer no 27-06, Transport Canada STC no. SH06-24				
United States	FAA STC no. SR02432NY				
13a. Certifies that the items identified above were manufactured in conformity to:		<input checked="" type="radio"/> Approved design data and are in condition for safe operation <input type="radio"/> Non approved design data specified in block 12.		14a. Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12 has been performed in compliance with the Canadian Aviation Regulations <input type="radio"/> CAR 571.10 Maintenance release. <input type="radio"/> Other regulation specified in block 12.	
13b. Signature 		13c. Approved Organization Number Inspector no: 001 / STC no SH06-24 Approved manufacturer no 27-06		14b. Signature	
13d. Name Nathalie Barbeau, Quality Manager		13e. Date (dd/mm/yyyy) 04/01/2010		14c. Approved Organization Number	
				14d. Name	
				14e. Date (dd/mm/yyyy)	

Ref: Transport Canada: Form One

- 1- This document does not constitute authority to install the part.
- 2- Installers working in accordance with the national regulations of a country other than that specified in block 1 must ensure that their regulations recognize certifications from the country specified.
- 3- Statements 13a & 14a do not constitute installation certification. In all cases the technical record for the aircraft must contain an installation certification issued in accordance with the applicable national regulations before the aircraft may be flown

Authorized Release Certificate

1. Approving National Aviation Authority / Country Transport Canada			2. Authorized Release Certificate Form One			3. Form Tracking No. HTC-RC091210-06b
4. Approved Organization Name & Address: Helitowcart (Vanair inc.) 860, St-Nicolas, Levis, Quebec, Canada G7A 5K6			5. Work Order/Contract/Invoice  Invoice 3404 Delmar Washington, Capital Helicopters, Yukon.			
6. Item	7. Description	8. Part no.	9. Qty	10. Serial / Lot no.	11. Status / work	
1	Helitowcart - BP44 BearPaw	HTC-MDL-BP-44-1000 112-0001-00	2	HTC-LNF-091210-01	New	
2	Low Rear U-Clip	314-0023-15-A	2	LN-100430-01	New	
3	Bolts AN4-15A	261-0002-17-A	4	L/N 10357	New	
4	Slotted Clip Supports	314-0007-15-B	4	L/N100315-01	New	
5	Washers	263-0001-17-A	8	L/N40-15318	New	
12. Remarks						
Canada: Transport Canada Approved manufacturer no 27-06, Transport Canada STC no. SH06-24 United States FAA STC no. SR02432NY						
13a. Certifies that the items identified above were manufactured in conformity to:			<input checked="" type="radio"/> Approved design data and are in condition for safe operation <input type="radio"/> Non approved design data specified in block 12.			
13b. Signature  <i>N. Barbeau</i>			13c. Approved Organization Number Inspector no: 001 / STC no SH06-24 Approved manufacturer no 27-06			
13d. Name Nathalie Barbeau, Quality Manager			13e. Date (dd/mm/yyyy) 11/03/2010			
14a. Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12 has been performed in compliance with the Canadian Aviation Regulations			<input type="radio"/> CAR 571.10 Maintenance release. <input type="radio"/> Other regulation specified in block 12.			
14b. Signature			14c. Approved Organization Number			
14d. Name			14e. Date (dd/mm/yyyy)			

Ref: Transport Canada: Form One

- 1- This document does not constitute authority to install the part.
- 2- Installers working in accordance with the national regulations of a country other than that specified in block 1 must ensure that their regulations recognize certifications from the country specified.
- 3- Statements 13a & 14a do not constitute installation certification. In all cases the technical record for the aircraft must contain an installation certification issued in accordance with the applicable national regulations before the aircraft may be flown



## Master Document List

Helitowcart Inc.

### Robinson R44 Helicopters Installation of BearPaw Model BP44

Report: HTC-MDL-BP-R44-1000 (Rev C)

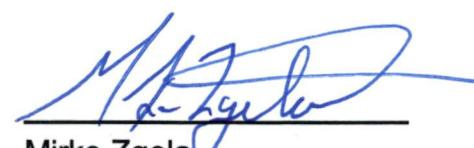
PREPARED BY:

DATE: APR 15, 2010

  
Simon Bernier  
Staff Specialist - Structures

APPROVED BY:

DATE: APR 15, 2010

  
Mirko Zgela  
Design Approval Representative DAR #310

Revision	Revision Date	Revision of Entry	Entered by
C	2010 04 15	Addition of a rear U shaped clip in the streamline BearPaw Pad configuration	S. Bernier
B	2009 10 22	Introduction of new streamline BearPaw Pad configuration as alternate	S. Bernier
A	2006 09 07	Drawings are added to include the provision of shims during the installation.	N. Barbeau

## 1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-R44-1000	Compliance Plan - Robinson R44 Helicopters -Installation of Bear Paw Model BP44	NC	DAR 310	July 4, 2006
314-0011-00	BearPaw Model BP44 – Installation Instructions - R44	D	DAR 310	Apr 15, 2010
AAC-STR-BP-R44-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP44	NC	DAR 310	July 4, 2006
AAC-FTR-C-FBLO	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Aug 4, 2006
HTC-TM-BP-R44-1000	Structural Substantiation - BearPaw Streamline BP44	NC	DAR 310	Oct 22, 2009
ATS-EO-BP-R44-1000	Engineering Order - BearPaw Streamline BP44	NC	DAR 310	Apr 15, 2010

## 2.0 MASTER DRAWINGS

Drawings # / P/N	Title	Revision Status	Approval by	Date
112-0001-01-C	BearPaw Assembly	C	DAR 310	Sept 6, 2006
112-0001-01-E	BearPaw Streamline Assembly	E	DAR 310	Apr 15, 2010
314-0002-15-A	BearPaw – Iceblade	A	DAR 310	Apr 24, 2006
314-0004-15-A	BearPaw – Iceblade Threaded Rod	A	DAR 310	Apr 24, 2006
314-0005-15-A	BearPaw – Iceblade Assembly	A	DAR 310	Apr 24, 2006
314-0001-01-A	BearPaw - Pad	A	DAR 310	Apr 24, 2006
314-0001-01-B	BearPaw – Pad Streamline	B	DAR 310	Oct 22, 2009
314-0006-15-B	BearPaw – U Shaped Clip	B	DAR 310	July 31, 2006
314-0023-15-A	BearPaw – Low U Shaped Clip	A	DAR 310	Feb 23, 2010
314-0007-15-B	Bearpaw – Slotted Clip Support	B	DAR 310	July 31, 2006
314-0012-01-A	Filler Block 1/4"	A	DAR 310	Aug 8, 2006
314-0014-01-A	Filler Block 3/32"	A	DAR 310	Sept 6, 2006
314-0015-01-A	Filler Block 1/8"	A	DAR 310	Sept 6, 2006
314-0022-01-A	Filler Block Rear	A	DAR 310	Oct 22, 2009



### 3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01-A	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01-A	Propriétés du UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05-A	Heat Shrink Specifications	A	N/A	Sept 6, 2006

**TABLE OF CONTENTS:**

<b>INTRODUCTION</b>	<b>p.2</b>
Scope	p.2
General	p.2
Helicopter Effectivity	p.2
Installer Responsibilities	p.2
<b>INSTALLATION</b>	<b>p.3</b>
BearPaw Installation	p.3
BearPaw Removal	p.5
Weight & Balance	p.5
Parts List	p.6
<b>INSPECTION</b>	<b>p.7</b>
Life Limited Items	p.7
Pre-Flight	p.7
Periodic Inspection Schedule	p.7
300 Hour or Yearly Inspection Details	p.7
Overhaul Requirements	p.8
<b>REVISIONS &amp; APPROVAL</b>	<b>p.8</b>
Annex A (BearPaw Assembly Drawing)	
Annex B (BearPaw Pad Allowable Damage Drawing)	

## INTRODUCTION

### Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw for your Robinson R44.

### General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

**Table 1 – Helitowcart Customer Support**

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 <a href="mailto:info@helitowcart.com">info@helitowcart.com</a>

### Helicopter Effectivity

This installation instruction applies to the following ROBINSON Helicopters:

**Table 2 – Robinson Helicopter Effectivity**

A/C Model	Serial no.	Type Certificate Data Sheet
R44	0271 thru 9999	H11NM
R44 II	1140, 10001 and subsequent	H11NM

### Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

## INTRODUCTION

### Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw for your Robinson R44.

### General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

**Table 1 – Helitowcart Customer Support**

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 <a href="mailto:info@helitowcart.com">info@helitowcart.com</a>

### Helicopter Effectivity

This installation instruction applies to the following ROBINSON Helicopters:

**Table 2 – Robinson Helicopter Effectivity**

A/C Model	Serial no.	Type Certificate Data Sheet
R44	0271 thru 9999	H11NM
R44 II	1140, 10001 and subsequent	H11NM

### Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

## INSTALLATION

### BearPaw Installation

#### Reference Documentation:

- [1] Robinson R44 - Maintenance Manual & Instruction for Continued Airworthiness. RTR460.
- [2] Annex A – BearPaw Assembly Drawings (112-0001-00-C & 112-0001-00-E)

#### Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);
- Remove aft skid wearshoe & re-install the attaching screws.

#### Step 2: BearPaw Preparation

- With IceBlade Option: Install ice blades (Qty:2) under BearPaw pad as per drawing (112-0001-00) Ref [2];
- With IceBlade Option: Insert washer (Washer P/N 263-0001-17) through threaded part of the ice blade and secure with nut (P/N 262-0001-17);
- Position the BearPaw under skid at the aft intersection with the cross tube as per figure 1 with narrow edge pointing forward.

#### Step 3: BearPaw Set Up

- Insert washers (P/N 263-0001-17) through all four front bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert bolts(P/N261-0002-17) & (261-0003-17) and washer (P/N 263-0001-17) through BearPaw pad as per drawing (112-0001-00) Ref [2]
- If Streamline model, then apply step 3.1. See step 3.1described below.
- Position the BearPaw pad under the skid
- Insert small filler blocks (P/N314-0012-01) & (P/N314-0014-01) at front of BearPaw& Insert filler blocks (P/N314-0015-01) at center of BearPaw as per drawing (112-0001-00) Ref [2];
- The use of filler blocks mentioned above may be increased, decreased, replaced or complemented by the use of washers (P/N 263-0001-17). Bolts (P/N261-0002-17) & (261-0003-17) may be replaced by longer or shorter AN4 bolts as required.
- Insert both U-shaped clips (P/N 314-0006-15) through bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert slotted clip supports (P/N 314-0007-15) through all four bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb.

#### Step 3.1: With the Streamline Version of the Bearpaw (P/N 112-0001-00-E)

- Insert washers (P/N 263-0001-17) through bolts (P/N261-0002-17)
- Insert bolts (P/N261-0002-17) and washer (P/N 263-0001-17) through the rear BearPaw pad as per drawing (112-0001-00-E) Ref [2]
- Insert rear filler block (P/N 314-0022-01) at the rear of BearPaw as per drawing (112-0001-00-E) Ref [2];
- Insert two washers (P/N 263-0001-17) per bolts (P/N261-0002-17) (four washers total)
- Insert Low U-shaped clip (P/N 314-0023-15) through bolts: (P/N261-0002-17) as per drawing (112-0001-00-E) Ref [2];
- Insert slotted clip supports (P/N 314-0007-15) through bolts. Position slotted clip supports with rounded edge toward helicopter skid;

- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Bolts (P/N 261-0002-17) may be replaced by longer or shorter AN4 bolts as required. Max. torque on nuts 60 in.-lb.

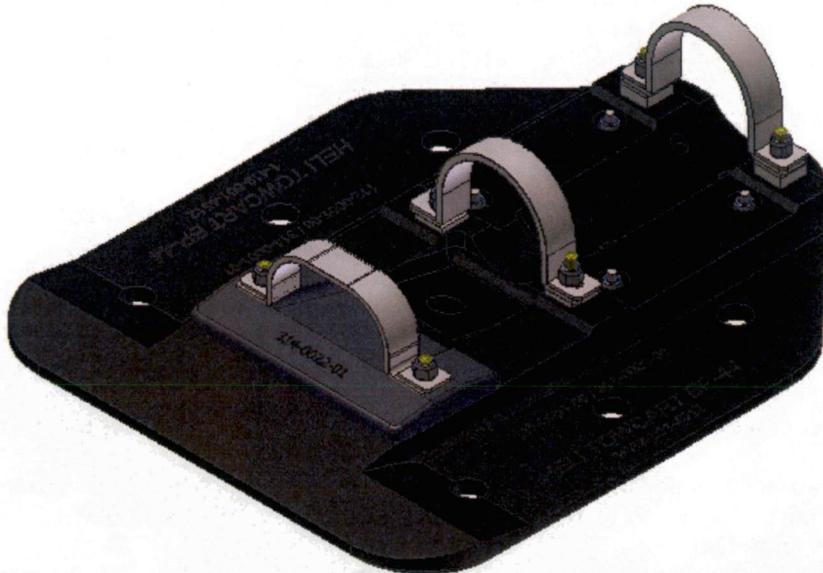
**Step 4: Final Step**

- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

**Figure 1 - Installed BearPaw Model BP44 (112-0001-00-C)**



**Figure 2 - BearPaw Model BP44 Streamline (112-0001-00-E)**

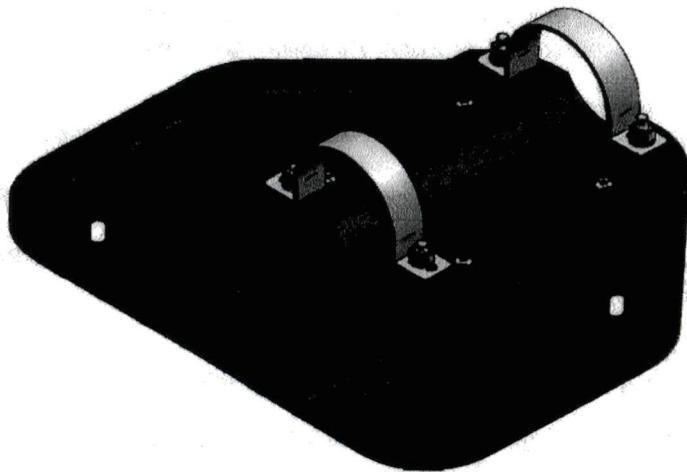


- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Bolts (P/N 261-0002-17) may be replaced by longer or shorter AN4 bolts as required. Max. torque on nuts 60 in.-lb.

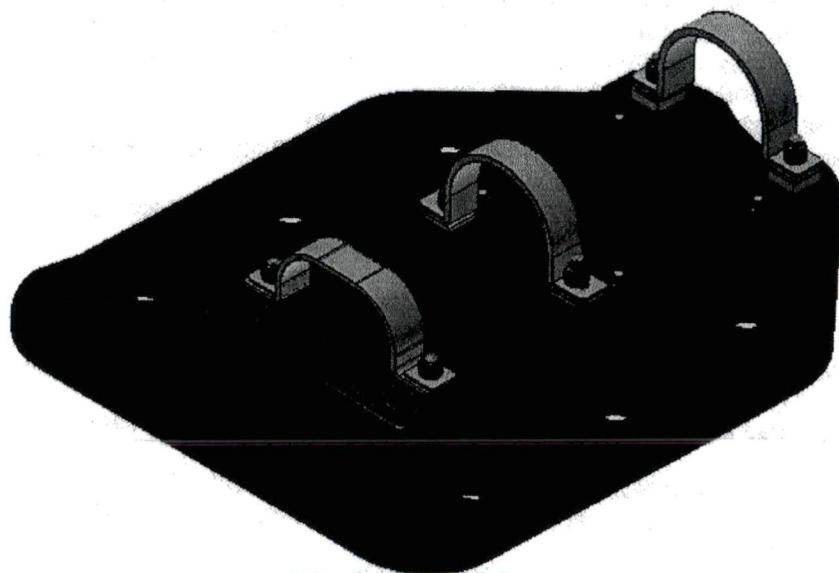
Step 4: Final Step

- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

**Figure 1 - Installed BearPaw Model BP44 (112-0001-00-C)**



**Figure 2 - BearPaw Model BP44 Streamline (112-0001-00-E)**



### **BearPaw Removal**

#### **Step 1: Helicopter Preparation**

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

#### **Step 2: BearPaw Removal**

- Remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15) and U-shaped clips (P/N 314-0006-15);
- With the Streamline Version of the Bearpaw (P/N 112-0001-00-E) remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15) and rear U-shaped clips (P/N 314-0023-15);
- Remove BearPaw pad (P/N 314-0001-01);
- Inspect skid tubes to confirm serviceability;
- Re-install aft wearshoe with screws as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required.

### **Weight & Balance**

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

**Table 3 – Weight & Balance Data**

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP44	5.9 Lb 2.7 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	758.1 in-lb 8.8 m-kg
Helitowcart BearPaw Model BP44 - Streamline	7.0 Lb 3.2 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	889.5 in-lb 10.4 m-kg



314-0011-00 Rev D  
BearPaw Model BP44  
Installation Instructions - R44

**Parts Lists**

The Helitowcart BearPaw detailed parts list is as follow:

Table 4 – Parts List

Description	Qty	Part No.	Name (Drawing no.)
<b>BearPaw Model BP44</b>	1	<b>112-0001-00</b>	<b>112-0001-00-C / BearPaw Assembly</b> <b>112-0001-00-E / BearPaw Streamline Assembly</b>
BearPaw pad	1	314-0001-01	314-0001-01-A / BearPaw – Pad (VNR088) 314-0001-01-B / BearPaw – Pad Streamline
Low U Shaped Clips	1	314-0023-15	BearPaw - Low U Shaped Clips
U Shaped Clips	2	314-0006-15	BearPaw - U Shaped Clips (VNR087)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks rear	1	314-0022-01	BearPaw – Filler block Rear
Filler blocks 1/4"	2	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Filler blocks 3/32"	2	314-0014-01	BearPaw – Filler block 3/32" (VNR103)
Filler blocks 1/8"	2	314-0015-01	BearPaw – Filler block 1/8" (VNR104)
Bolts	2 *(+2)	261-0002-17	Bolt- AN4-15 *Note: for Streamline Assembly
Bolts	2	261-0003-17	Bolt- AN4-16
Nuts	4 *(+2)	262-0001-17	Nut- MS20-365-428 *Note: +2 for Streamline Assembly
Washers	8 *(+8)	263-0001-17	Washer – AN960-416 *Note: +8 for Streamline Assembly
Shrink	3	314-0016-00	BearPaw – Shrink Specifications & Installation
<b>IceBlade Option Model OIB</b>	2	<b>314-0005-15</b>	<b>VNR086 / IceBlade Assembly</b>
Nuts	4	262-0001-17	Nut- MS20-365-428
Washers	4	263-0001-17	Washer – AN960-416

### Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

Table 4 – Parts List

Description	Qty	Part No.	Name (Drawing no.)
<b>BearPaw Model BP44</b>	<b>1</b>	<b>112-0001-00</b>	<b>112-0001-00-C / BearPaw Assembly 112-0001-00-E / BearPaw Streamline Assembly</b>
BearPaw pad	1	314-0001-01	314-0001-01-A / BearPaw – Pad (VNR088) 314-0001-01-B / BearPaw – Pad Streamline
Low U Shaped Clips	1	314-0023-15	BearPaw - Low U Shaped Clips
U Shaped Clips	2	314-0006-15	BearPaw - U Shaped Clips (VNR087)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks rear	1	314-0022-01	BearPaw – Filler block Rear
Filler blocks 1/4"	2	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Filler blocks 3/32"	2	314-0014-01	BearPaw – Filler block 3/32" (VNR103)
Filler blocks 1/8"	2	314-0015-01	BearPaw – Filler block 1/8" (VNR104)
Bolts	2 *(+2)	261-0002-17	Bolt- AN4-15 *Note: for Streamline Assembly
Bolts	2	261-0003-17	Bolt- AN4-16
Nuts	4 *(+2)	262-0001-17	Nut- MS20-365-428 *Note: +2 for Streamline Assembly
Washers	8 *(+8)	263-0001-17	Washer – AN960-416 *Note: +8 for Streamline Assembly
Shrink	3	314-0016-00	BearPaw – Shrink Specifications & Installation
<b>IceBlade Option Model OIB</b>	<b>2</b>	<b>314-0005-15</b>	<b>VNR086 / IceBlade Assembly</b>
Nuts	4	262-0001-17	Nut- MS20-365-428
Washers	4	263-0001-17	Washer – AN960-416

## INSPECTION

### Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

### Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:  
 Table 5 – Tolerances for cracks & wear;  
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2) or  
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

### Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 300 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the R44 landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 300 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

### 300 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:  
 Table 5 – Tolerances for cracks & wear;  
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2); or  
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

**Table 5 – Tolerances for Cracks & Wear**

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,350	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Stiffeners:</u> NO cracks in stiffeners.  <u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,350	0,050	



314-0011-00 Rev D  
BearPaw Model BP44  
Installation Instructions - R44

E	N/A	N/A	No cracks allowed in zone E
F	0,350	0,050	For P/N 314-0001-01-B Only
G	0,75	0,050	For P/N 314-0001-01-B Only

#### Overhaul Requirements

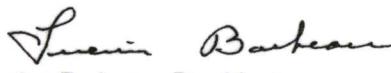
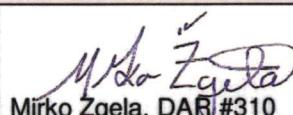
- Not applicable for the designated application of this device.

#### REVISIONS & APPROVAL

##### Revisions

Date	Rev	Nature of Revisions
April 15, 2010	D	Addition of a rear U shaped clip in the Streamline BearPaw Pad configuration.
October 22, 2009	C	Introduction of new streamline BearPaw Pad configuration as alternate.
September 7, 2006	B	- Added filler blocks and heat shrink to product list. - Modified recommended bolt models (lengthened) - Revised inspection requirements from 100 hour to 300 hour intervals. - Identification of the IceBlade assembly as an optional feature.
June 12, 2006	A	Initial issue

##### Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	April 15, 2010
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	April 15, 2010

##### Annex A

See: BearPaw Assembly, drawing no. 112-0001-00-C  
BearPaw Streamline Assembly, drawing no. 112-0001-00-E

##### Annex B

See: BearPaw Pad Allowable Damage Drawing, drawing no. 314-0001-01-A (VNR088) page 2 of 2.  
BearPaw Streamline Allowable Damage Drawing, drawing no. 314-0001-01-B page 3 of 3)

E	N/A	N/A	No cracks allowed in zone E
F	0,350	0,050	<u>For P/N 314-0001-01-B Only</u>
G	0,75	0,050	<u>For P/N 314-0001-01-B Only</u>

### Overhaul Requirements

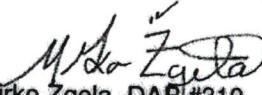
- Not applicable for the designated application of this device.

### REVISIONS & APPROVAL

#### Revisions

Date	Rev	Nature of Revisions
April 15, 2010	D	Addition of a rear U shaped clip in the Streamline BearPaw Pad configuration.
October 22, 2009	C	Introduction of new streamline BearPaw Pad configuration as alternate.
September 7, 2006	B	- Added filler blocks and heat shrink to product list. - Modified recommended bolt models (lengthened) - Revised inspection requirements from 100 hour to 300 hour intervals. - Identification of the IceBlade assembly as an optional feature.
June 12, 2006	A	Initial issue

#### Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	April 15, 2010
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	April 15, 2010

#### Annex A

See: BearPaw Assembly, drawing no. 112-0001-00-C  
 BearPaw Streamline Assembly, drawing no. 112-0001-00-E

#### Annex B

See: BearPaw Pad Allowable Damage Drawing, drawing no. 314-0001-01-A (VNR088) page 2 of 2.  
 BearPaw Streamline Allowable Damage Drawing, drawing no. 314-0001-01-B page 3 of 3)



314-0011-00 Rev D  
BearPaw Model BP44  
Installation Instructions - R44

#### Annex A

BearPaw Assembly, Drawing no. 112-0001-00-C  
BearPaw Streamline Assembly, Drawing no. 112-0001-00-E

Page 9 of 14

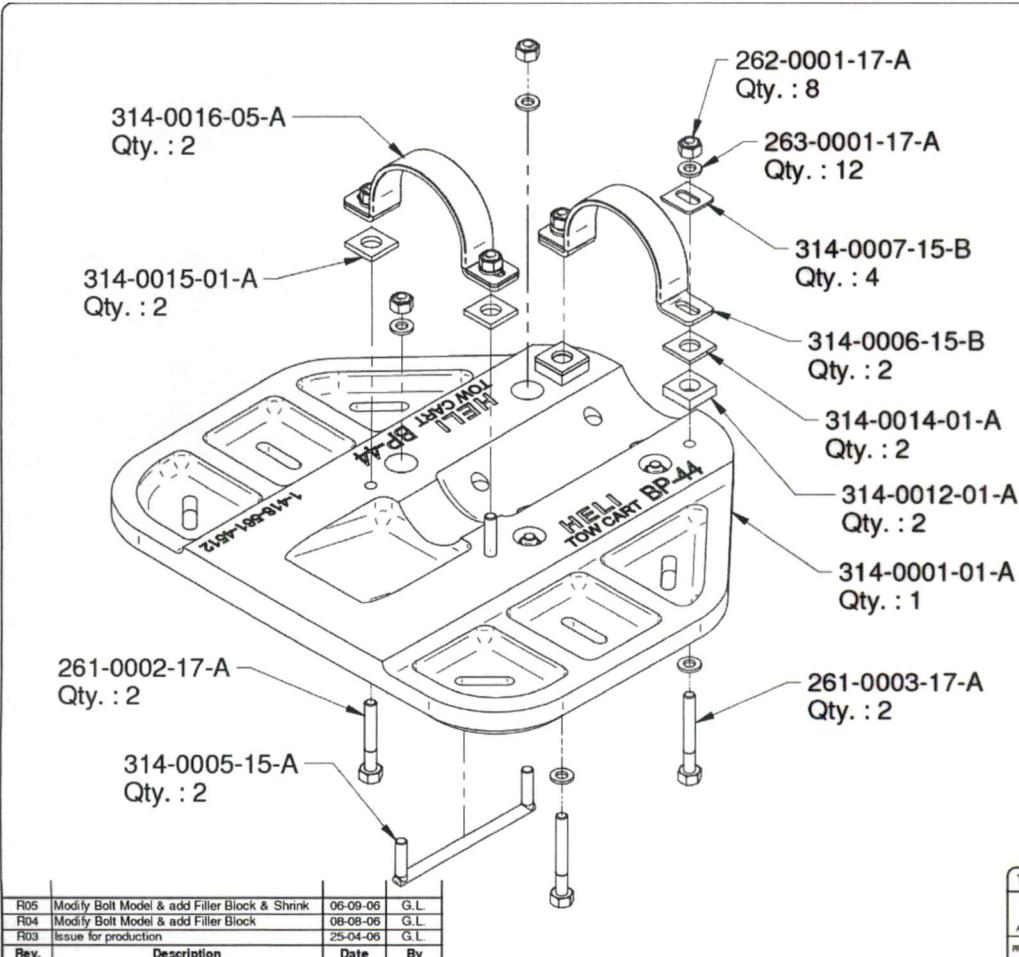
Tel: 1-418-561-4512, Fax: 1-418-836-2291, 860 Marie-Victorin, Saint-Nicolas, Levis, Quebec, Canada G7A 3S9.  
[www.helitowcart.com](http://www.helitowcart.com)   [info@helitowcart.com](mailto:info@helitowcart.com)



## 314-0011-00 Rev D BearPaw Model BP44 Installation Instructions - R44



N°	Qty	Description	Part #
1'	1	Bearpaw - Pad	314-0001-01-A
2'	2	Bearpaw - Iceblade assembly	314-0005-15-A
3'	2	Bearpaw - U Shaped clip	314-0006-15-B
4'	4	Bearpaw - Slotted clip support	314-0007-15-B
5'	8	Nut MS20-365-428	262-0001-17-A
6'	12	Washer AN960-416	263-0001-17-A
7'	2	Bolt AN4-15A	261-0002-17-A
8'	2	Bearpaw - Filter Block 1/4"	314-0012-01-A
9'	2	Bolt AN4-16A	261-0003-17-A
10'	2	Bearpaw - Shrink 1x5"	314-0016-05-A
11'	2	Bearpaw - Filter Block 1/8"	314-0015-01-A
12'	2	Bearpaw - Filter Block 3/32"	314-0014-01-A



NOTE : Iceblade assembly can be omitted from installation (Optional)

<b>TOLERANCES</b>		Bearpaw Assembly	
Desired part dimension	Actual dimension	Format	Scale / Ratio
G. Lapointe	2006-04-25	B	1 de 1
Verifier / Checked by	Date (yyyy-mm-dd)	Numero dessin / Drawing Number	Revis.
		VNR083	R05
Approve per / Approved by	Date (yyyy-mm-dd)	Numero de pièce / Part Number	Revis.
		112-0001-00-C	



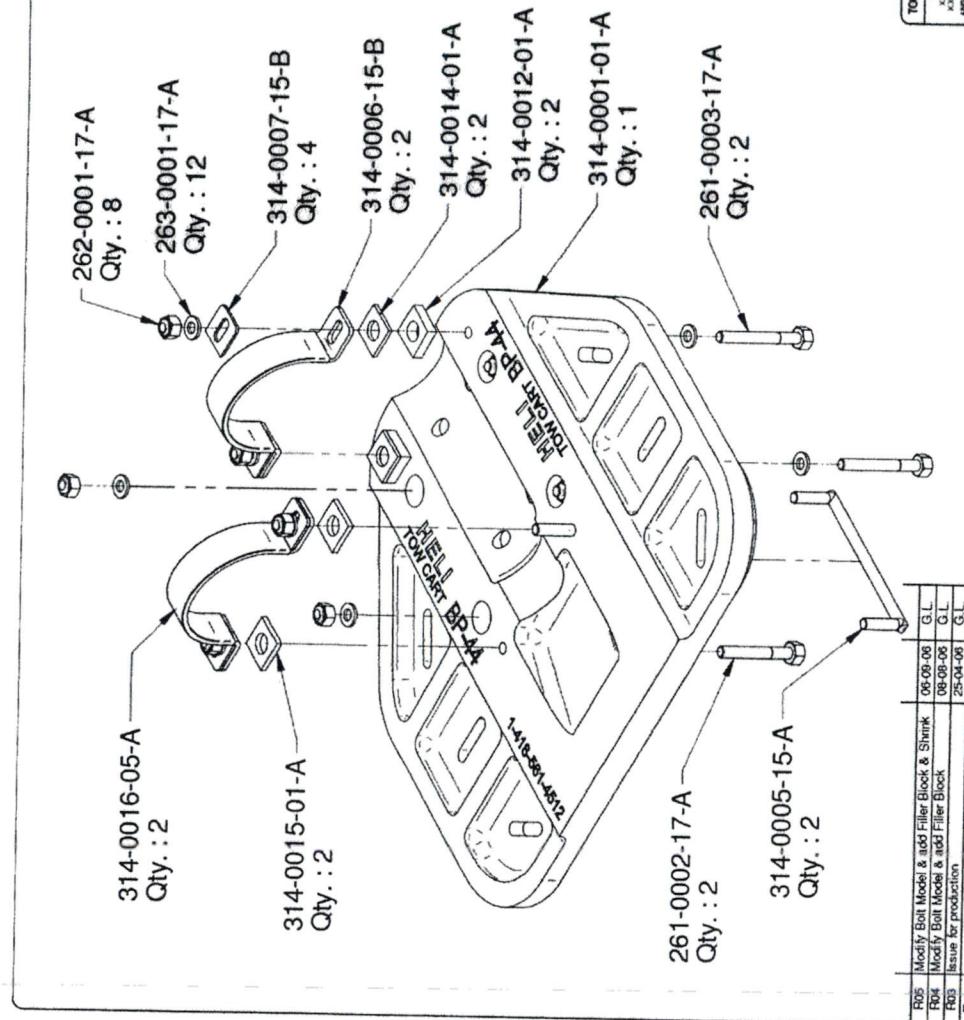
314-0011-00 Rev D

**BearPaw Model BP44  
Installation Instructions - R44**

N	Qty	Description	Part #
1	1	Bearpaw - Pad	34-0001-01-A
2	2	Bearpaw - I-beam/plate assembly	34-0005-15-A
3	2	Bearpaw - U Shaped clip	34-0006-15-B
4	4	Bearpaw - Slotted clip support	34-0007-15-B
5	8	Nut MS20-365-42B	262-0001-17-A
6	12	Washer AN960-416	263-0001-17-A
7	2	Bolt AN4-15A	261-0002-17-A
8	2	Bearpaw - Filter Block 1/4"	34-0012-01-A
9	2	Bolt AN4-16A	261-0003-17-A
10	2	Bearpaw - Strainer 1 1/2"	34-0016-05-A
11	2	Bearpaw - Filter Block 1/8"	34-0015-01-A
12	2	Bearpaw - Filter Block 3/32"	34-0016-01-A



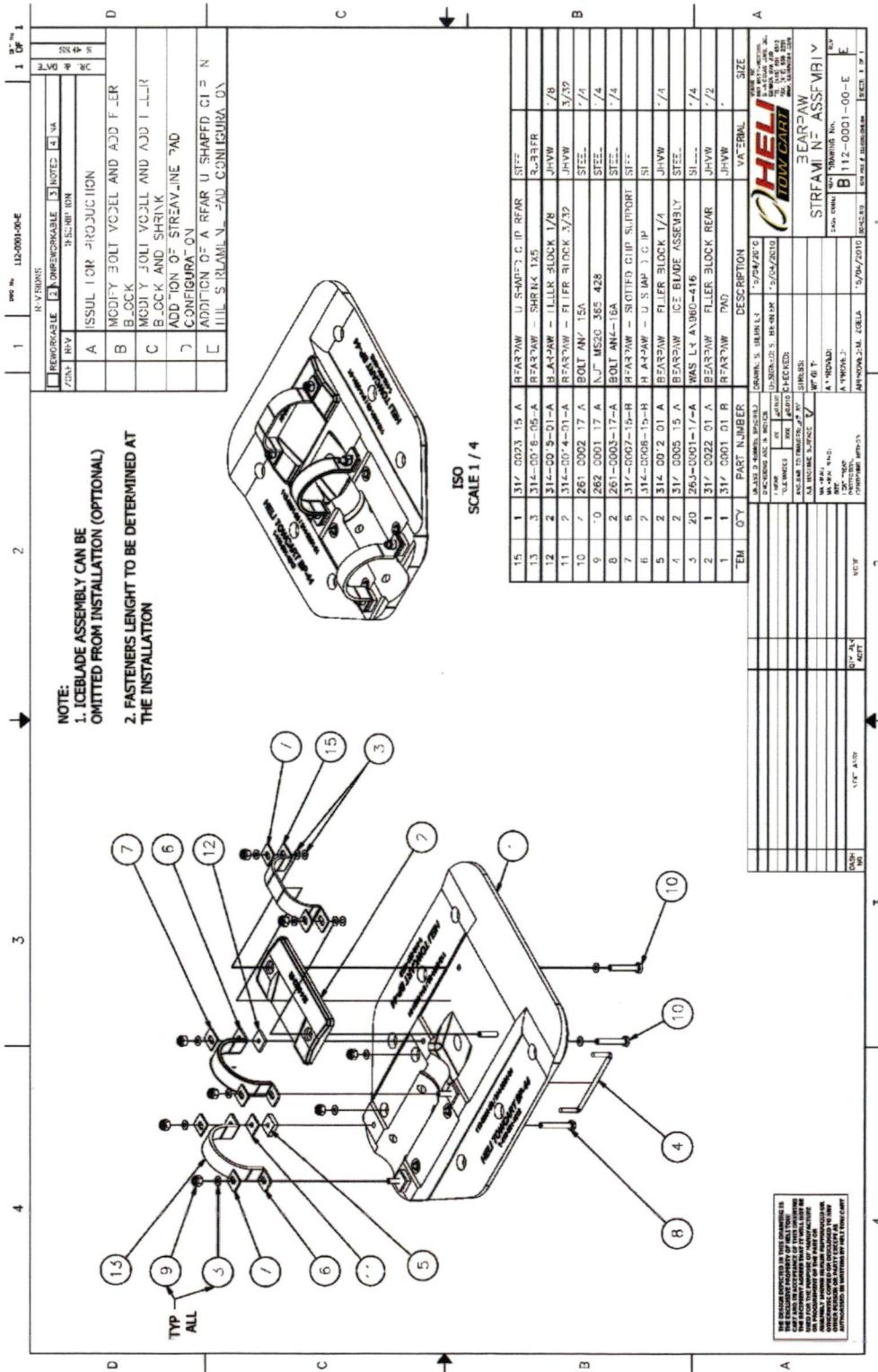
**NOTE :** Iceblade assembly can be omitted from installation (Optional)



Bear paw Assembly					
TOLERANCES	Ref.	Description	Date	By	www.bearpaw.com
R05	Modify Bolt Model & add Filler Block & Shrink	06-06-06	G.L		
R04	Modify Bolt Model & add Filler Block	08-06-06	G.L		
R03	Issue for production	25-04-06	G.L		



**314-0011-00 Rev D**  
**BearPaw Model BP44**  
**Installation Instructions - R44**



Page 11 of 14

Tel: 1-418-561-4512, Fax: 1-418-836-2291, 860 Marie-Victorin, Saint-Nicolas, Levis, Quebec, Canada G7A 3S9.  
[www.helitowcart.com](http://www.helitowcart.com) [info@helitowcart.com](mailto:info@helitowcart.com)

**Annex B**

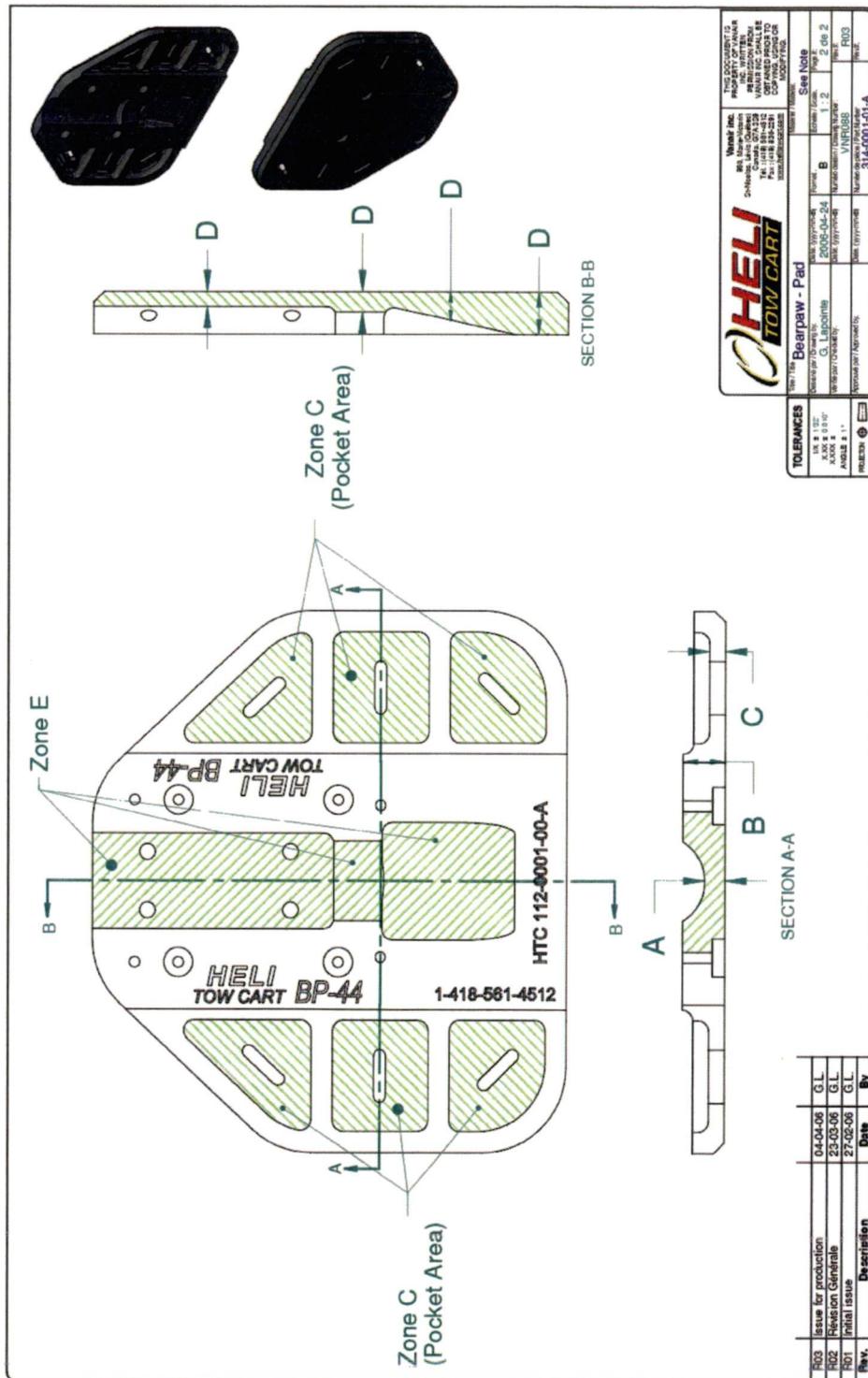
BearPaw Pad Allowable Damage Drawing, Drawing no. 314-0001-01-A (VNR088), Page 2 of 2  
BearPaw Streamline Allowable Damage Drawing, Drawing no. 314-0001-01-B, Page 3 of 3

**Annex B**

BearPaw Pad Allowable Damage Drawing, Drawing no. 314-0001-01-A (VNR088), Page 2 of 2  
BearPaw Streamline Allowable Damage Drawing, Drawing no. 314-0001-01-B, Page 3 of 3

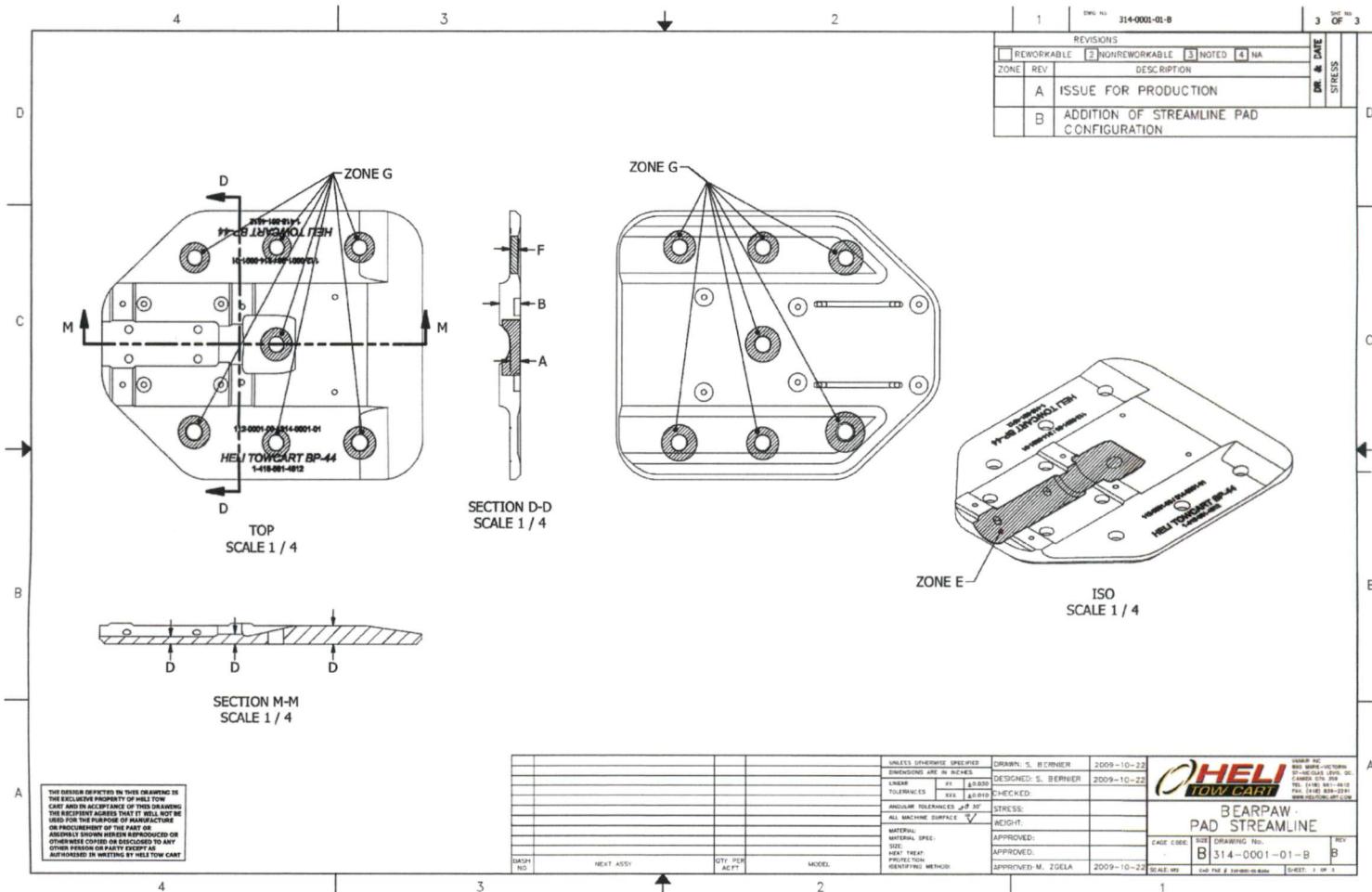


**314-0011-00 Rev D**  
**BearPaw Model BP44**  
**Installation Instructions - R44**



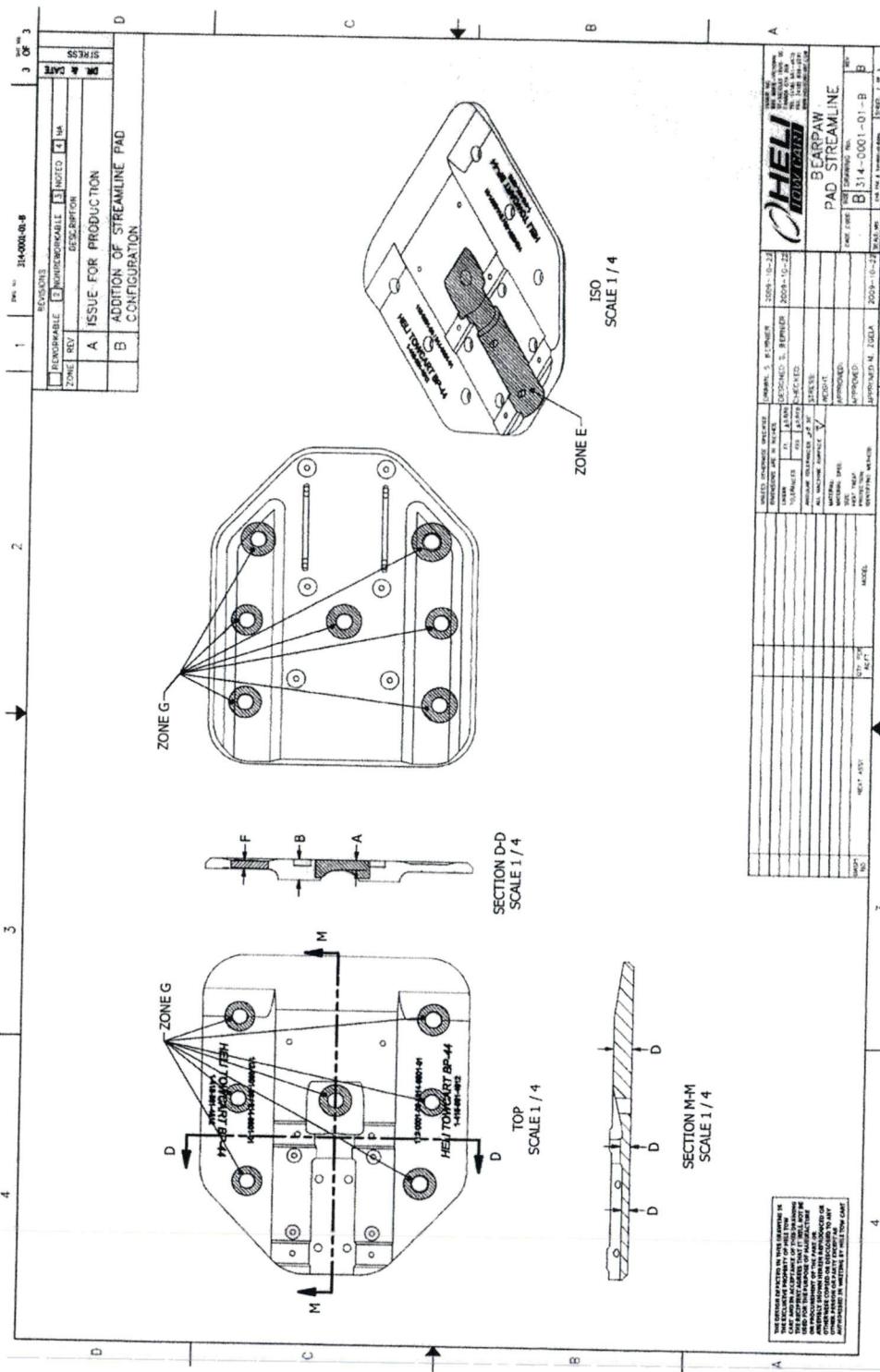
Page 13 of 14

**Tel: 1-418-561-4512, Fax: 1-418-836-2291, 860 Marie-Victorin, Saint-Nicolas, Levis, Quebec, Canada G7A 3S9.  
[www.helitowcart.com](http://www.helitowcart.com)   [info@helitowcart.com](mailto:info@helitowcart.com)**



**314-0011-00 Rev D**  
**BearPaw Model BP44**  
**Installation Instructions - R44**

Tel: 1-418-561-4512, Fax: 1-418-836-2291, 860 Marie-Victorin, Saint-Nicolas, Levis, Quebec, Canada G7A 3S9.  
[www.heliowear.com](http://www.heliowear.com) [info@heliowear.com](mailto:info@heliowear.com)





## Engineering Order

<b>Title:</b> Engineering Order - BearPaw Streamline BP44				<b>EO#</b> ATS-EO-BP-R44-1000 Rev NC	
<b>Prepared by:</b>  S. Bernier	<b>Design:</b> N/A	<b>Mech:</b> N/A	<b>Stress:</b> N/A	<b>Approved:</b>  Mirko Zgela (DAR #310)	<b>Date:</b> Apr 15, 2010
<b>A/C Effectivity</b> R44 R44 II	<b>Registration:</b> N/A			<b>Serial#:</b> 0271 thru 9999 1140, 10001 and subsequent	
<b>Reference Documents:</b> <ul style="list-style-type: none"><li>[1] Robinson R44 - Maintenance Manual &amp; Instruction for Continued Airworthiness. RTR460</li><li>[2] 314-0011-00-A Rev_D BearPaw Model BP44 – Installation Instructions - R44, dated April 15, 2010</li><li>[3] AAC-STR-BP-R44-1000, Structural Substantiation – Helitowcart (Vanair Inc.) BearPaw Model BP44, dated July 4, 2006</li></ul>					
<b>Applicable Drawings:</b> <ul style="list-style-type: none"><li>[4] 112-0001-00-E BearPaw Streamline Assembly</li></ul>					
<b>Background:</b> The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter.					
<b>Description of Change:</b> The BearPaw Streamline Pad (P/N 314-0001001-B) is longer than the original design. An additional support is required to provide added support to the Pad in the unlikely event that a Pad would get stuck into the mud. Figures (1) shows the BearPaw Streamline assembly .					

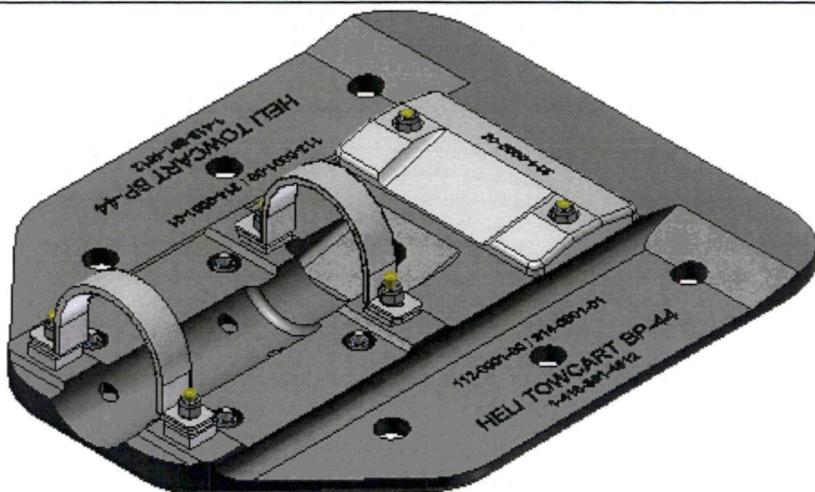
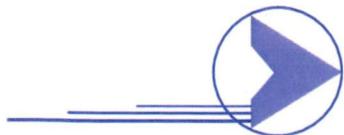


Figure 1 - BearPaw Streamline Assembly

**New configuration:**

As a preventive measure to reduce the bending moment and the load in the middle U clips during lift-off a U clip is added. Figure 2 shows the new assembly.

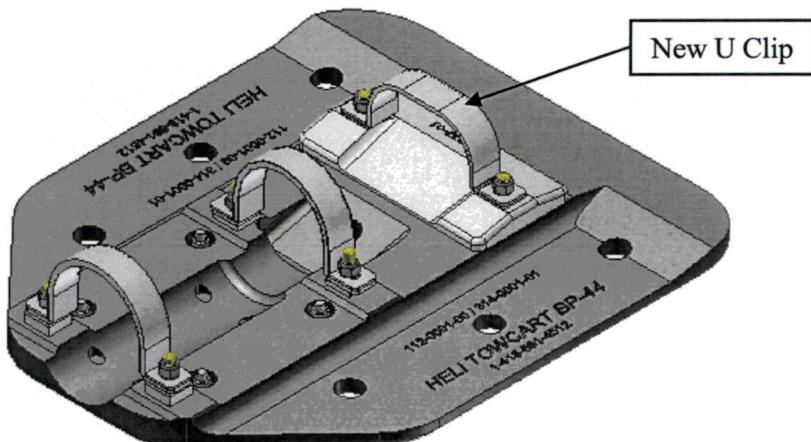


Figure 2 - BearPaw Streamline New Assembly

**Structural Analysis:**

No additional structural analysis is needed since the two front U clips have proven to take the load during the landing in the document # AAC-STR-BP-R44-1000, Structural Substantiation – Helitowcart (Vanair Inc.) BearPaw Model BP44, dated July 4, 2006.



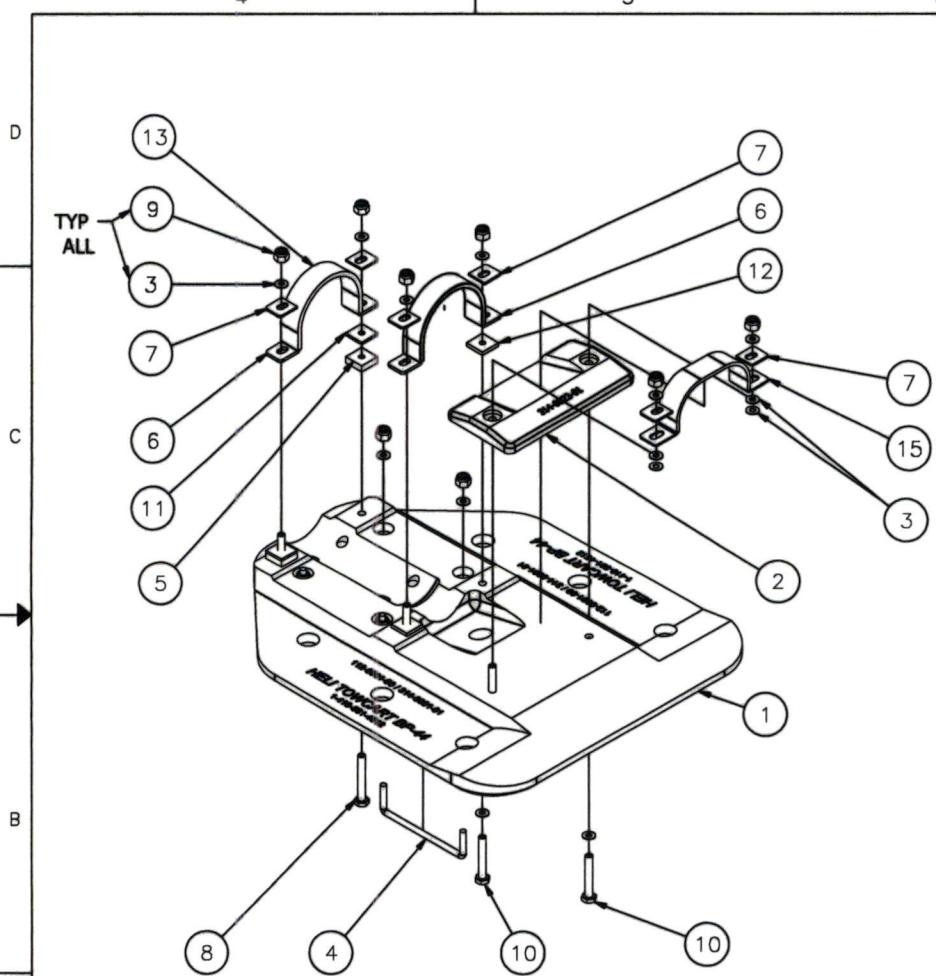
## Aviatech Technical Services Inc.

3005 rue Lindbergh  
Trois-Rivières, Québec  
G9A 5E1

### Installation Instructions:

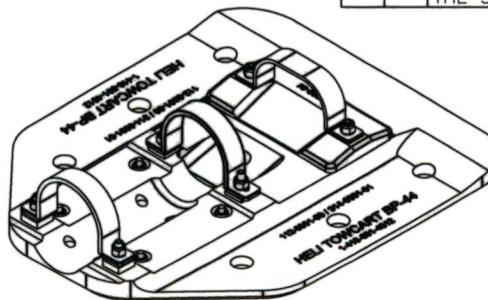
1

Install the BearPaw Streamline assembly as per document #314-0011-00, Rev D, BearPaw Model BP44 – Installation Instructions - R44



**NOTE:**

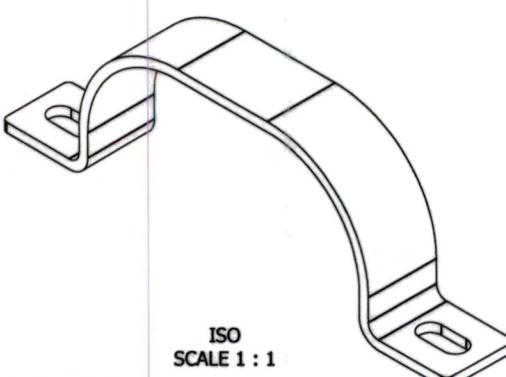
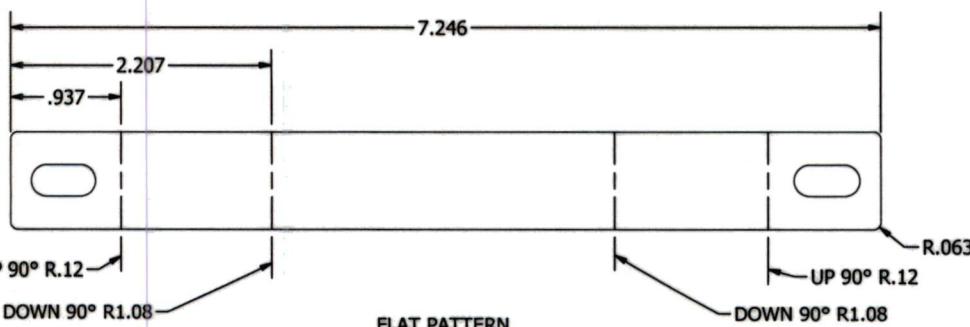
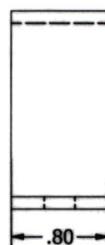
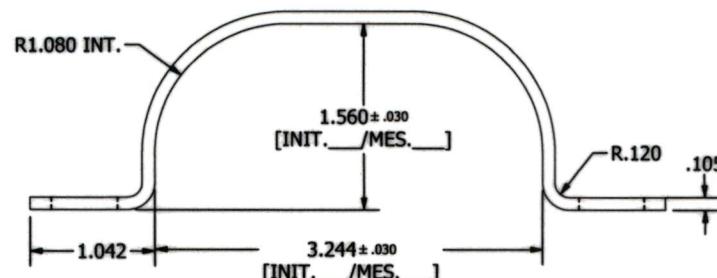
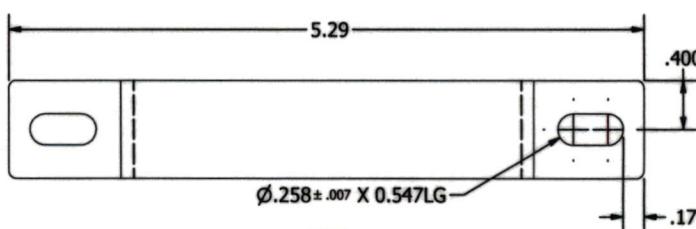
1. ICEBLADE ASSEMBLY CAN BE OMITTED FROM INSTALLATION (OPTIONAL)
2. FASTENERS LENGTH TO BE DETERMINED AT THE INSTALLATION



ISO  
SCALE 1 / 4

15	1	314-0023-15-A	BEARPAW - U SHAPED CLIP REAR	STEEL	
13	3	314-0016-05-A	BEARPAW - SHRINK 1X5	RUBBER	
12	2	314-0015-01-A	BEARPAW - FILLER BLOCK 1/8	UHMW	1/8
11	2	314-0014-01-A	BEARPAW - FILLER BLOCK 3/32	UHMW	3/32
10	4	261-0002-17-A	BOLT AN4-15A	STEEL	1/4
9	10	262-0001-17-A	NUT MS20-365-428	STEEL	1/4
8	2	261-0003-17-A	BOLT AN4-16A	STEEL	1/4
7	6	314-0007-15-B	BEARPAW - SLOTTED CLIP SUPPORT	STEEL	
6	2	314-0006-15-B	BEARPAW - U SHAPED CLIP	STEEL	
5	2	314-0012-01-A	BEARPAW - FILLER BLOCK 1/4	UHMW	1/4
4	2	314-0005-15-A	BEARPAW - ICE BLADE ASSEMBLY	STEEL	
3	20	263-0001-17-A	WASHER AN960-416	STEEL	1/4
2	1	314-0022-01-A	BEARPAW - FILLER BLOCK REAR	UHMW	1/2
1	1	314-0001-01-B	BEARPAW - PAD	UHMW	1
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SIZE

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SIZE	
			UNLESS OTHERWISE SPECIFIED	DRAWN: S. BERNIER	15/04/2010	 <b>BEARPAW STREAMLINE ASSEMBLY</b>
			DIMENSIONS ARE IN INCHES.	DESIGNED: S. BERNIER	15/04/2010	
			LINAR <b>XX</b> $\pm 0.030$	CHECKED:		
			TOLERANCES <b>XXX</b> $\pm 0.010$			
			ANGULAR TOLERANCES: $\pm 0^{\circ}30'$	STRESS:		
			ALL MACHINE SURFACE ✓	WEIGHT:		
			MATERIAL:	APPROVED:		
			MATERIAL SPEC:	APPROVED:		
			SIZE:	APPROVED:		
			HEAT TREAT:	APPROVED:		
			PROTECTION:	APPROVED:		
			IDENTIFYING METHOD:	APPROVED: M. ZGELA	15/04/2010	
DASH NO	NEXT ASSY	QTY PER ACFT	MODEL	SCALE: NTS	CAD FILE # 112-0001-00-E.dwg	SHEET: 1 OF 1

<p style="text-align: center;">4</p> <p><b>NOTES:</b></p> <ol style="list-style-type: none"> <li>1. INTERPRET DRAWING IN ACCORDANCE WITH ANSI Y14.5M 1994. DIMENSIONS AND TOLERANCING</li> <li>2. REMOVE ALL BURRS AND SHARP EDGES 1/64" MAX</li> <li>3. FILL CLIENT INSPECTION FORM</li> </ol> <p style="text-align: center;">D</p>  <p style="text-align: center;">ISO SCALE 1 : 1</p> <p><b>FLAT PATTERN SCALE 1 : 1</b></p>  <p><b>LEFT SCALE 1 : 1</b></p>  <p><b>FRONT SCALE 1 : 1</b></p>  <p><b>TOP SCALE 1 : 1</b></p>  <p><b>DRAWING NO. 314-0023-15-A</b></p> <p><b>REV. A ISSUE FOR PRODUCTION</b></p> <p><b>REVISIONS</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;"><input type="checkbox"/> REWORKABLE</td> <td style="width: 25%;"><input type="checkbox"/> NONREWORKABLE</td> <td style="width: 25%;"><input checked="" type="checkbox"/> NOTED</td> <td style="width: 25%;"><input type="checkbox"/> NA</td> </tr> <tr> <td>ZONE</td> <td>REV.</td> <td colspan="2">DESCRIPTION</td> </tr> <tr> <td></td> <td></td> <td colspan="2"></td> </tr> </table> <p><b>DR. &amp; DATE</b></p> <p><b>STRESS</b></p> <p><b>D</b></p>	<input type="checkbox"/> REWORKABLE	<input type="checkbox"/> NONREWORKABLE	<input checked="" type="checkbox"/> NOTED	<input type="checkbox"/> NA	ZONE	REV.	DESCRIPTION						<p style="text-align: center;">3</p> <p><b>1</b></p>	<p style="text-align: center;">2</p> <p><b>1</b></p>	<p style="text-align: center;">1</p> <p><b>DWG No. 314-0023-15-A</b></p> <p><b>1 OF 1</b></p> <p><b>ITEM QTY PART NUMBER DESCRIPTION MATERIAL SIZE</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>DASH NO</th> <th>NEXT ASSY</th> <th>QTY PER ACFT</th> <th>MODEL</th> <th>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.</th> <th>DRAWN: S. BERNIER 15/04/2010</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td>LINEAR <input checked="" type="checkbox"/> <math>\pm .030</math></td> <td>DESIGNED: S. BERNIER 15/04/2010</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>TOLERANCES <input checked="" type="checkbox"/> <math>\pm .010</math></td> <td>CHECKED:</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>ANGULAR TOLERANCES: <math>\pm 30^\circ</math></td> <td>STRESS:</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>ALL MACHINE SURFACE <input checked="" type="checkbox"/></td> <td>WEIGHT:</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>MATERIAL:</td> <td>APPROVED:</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>MATERIAL SPEC:</td> <td>APPROVED:</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>SIZE:</td> <td>APPROVED:</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>HEAT TREAT:</td> <td>APPROVED:</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>PROTECTION:</td> <td>APPROVED:</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>IDENTIFYING METHOD:</td> <td>APPROVED: M. ZGELA 15/04/2010</td> </tr> </tbody> </table> <p><b>OHELI TOW CART</b></p> <p><b>BEARPAW LOW U SHAPED CLIP</b></p> <p><b>DRAWING NO. 314-0023-15-A</b></p> <p><b>REV. A</b></p> <p><b>UNNAR BRO MARIE-VICTORIN ST-MICHAEL LEVIS, QC, CANADA J0R 1L0 TEL: (418) 561-4512 FAX: (418) 836-2291 WWW.OHELI.TOWCART.COM</b></p> <p><b>CAGE CODE: B</b></p> <p><b>SCALE: MTS CAD FILE # 314-0023-15-A.m3d SHEET: 1 OF 1</b></p> <p><b>A</b></p>	DASH NO	NEXT ASSY	QTY PER ACFT	MODEL	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.	DRAWN: S. BERNIER 15/04/2010					LINEAR <input checked="" type="checkbox"/> $\pm .030$	DESIGNED: S. BERNIER 15/04/2010					TOLERANCES <input checked="" type="checkbox"/> $\pm .010$	CHECKED:					ANGULAR TOLERANCES: $\pm 30^\circ$	STRESS:					ALL MACHINE SURFACE <input checked="" type="checkbox"/>	WEIGHT:					MATERIAL:	APPROVED:					MATERIAL SPEC:	APPROVED:					SIZE:	APPROVED:					HEAT TREAT:	APPROVED:					PROTECTION:	APPROVED:					IDENTIFYING METHOD:	APPROVED: M. ZGELA 15/04/2010
<input type="checkbox"/> REWORKABLE	<input type="checkbox"/> NONREWORKABLE	<input checked="" type="checkbox"/> NOTED	<input type="checkbox"/> NA																																																																														
ZONE	REV.	DESCRIPTION																																																																															
DASH NO	NEXT ASSY	QTY PER ACFT	MODEL	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.	DRAWN: S. BERNIER 15/04/2010																																																																												
				LINEAR <input checked="" type="checkbox"/> $\pm .030$	DESIGNED: S. BERNIER 15/04/2010																																																																												
				TOLERANCES <input checked="" type="checkbox"/> $\pm .010$	CHECKED:																																																																												
				ANGULAR TOLERANCES: $\pm 30^\circ$	STRESS:																																																																												
				ALL MACHINE SURFACE <input checked="" type="checkbox"/>	WEIGHT:																																																																												
				MATERIAL:	APPROVED:																																																																												
				MATERIAL SPEC:	APPROVED:																																																																												
				SIZE:	APPROVED:																																																																												
				HEAT TREAT:	APPROVED:																																																																												
				PROTECTION:	APPROVED:																																																																												
				IDENTIFYING METHOD:	APPROVED: M. ZGELA 15/04/2010																																																																												

## Master Document List

Helitowcart Inc.

### Robinson R44 Helicopters Installation of BearPaw Model BP44

Report: HTC-MDL-BP-R44-1000 (Rev C)

PREPARED BY:



Simon Bernier  
Staff Specialist - Structures

DATE: APR 15, 2010

APPROVED BY:



Mirko Zgela  
Design Approval Representative DAR #310

DATE: APR 15, 2010

Revision	Revision Date	Revision of Entry	Entered by
C	2010 04 15	Addition of a rear U shaped clip in the streamline BearPaw Pad configuration	S. Bernier
B	2009 10 22	Introduction of new streamline BearPaw Pad configuration as alternate	S. Bernier
A	2006 09 07	Drawings are added to include the provision of shims during the installation.	N. Barbeau



## 1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-R44-1000	Compliance Plan - Robinson R44 Helicopters -Installation of Bear Paw Model BP44	NC	DAR 310	July 4, 2006
314-0011-00	BearPaw Model BP44 – Installation Instructions - R44	D	DAR 310	Apr 15, 2010
AAC-STR-BP-R44-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP44	NC	DAR 310	July 4, 2006
AAC-FTR-C-FBLO	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Aug 4, 2006
HTC-TM-BP-R44-1000	Structural Substantiation - BearPaw Streamline BP44	NC	DAR 310	Oct 22, 2009
ATS-EO-BP-R44-1000	Engineering Order - BearPaw Streamline BP44	NC	DAR 310	Apr 15, 2010

## 2.0 MASTER DRAWINGS

Drawings # / P/N	Title	Revision Status	Approval by	Date
112-0001-01-C	BearPaw Assembly	C	DAR 310	Sept 6, 2006
112-0001-01-E	BearPaw Streamline Assembly	E	DAR 310	Apr 15, 2010
314-0002-15-A	BearPaw – Iceblade	A	DAR 310	Apr 24, 2006
314-0004-15-A	BearPaw – Iceblade Threaded Rod	A	DAR 310	Apr 24, 2006
314-0005-15-A	BearPaw – Iceblade Assembly	A	DAR 310	Apr 24, 2006
314-0001-01-A	BearPaw - Pad	A	DAR 310	Apr 24, 2006
314-0001-01-B	BearPaw – Pad Streamline	B	DAR 310	Oct 22, 2009
314-0006-15-B	BearPaw – U Shaped Clip	B	DAR 310	July 31, 2006
314-0023-15-A	BearPaw – Low U Shaped Clip	A	DAR 310	Apr 15, 2010
314-0007-15-B	Bearpaw – Slotted Clip Support	B	DAR 310	July 31, 2006
314-0012-01-A	Filler Block 1/4"	A	DAR 310	Aug 8, 2006
314-0014-01-A	Filler Block 3/32"	A	DAR 310	Sept 6, 2006
314-0015-01-A	Filler Block 1/8"	A	DAR 310	Sept 6, 2006
314-0022-01-A	Filler Block Rear	A	DAR 310	Oct 22, 2009



### 3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01-A	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01-A	Propriétés du UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05-A	Heat Shrink Specifications	A	N/A	Sept 6, 2006

**TABLE OF CONTENTS:**

<b>INTRODUCTION</b>	<b>p.2</b>
Scope	p.2
General	p.2
Helicopter Effectivity	p.2
Installer Responsibilities	p.2
<b>INSTALLATION</b>	<b>p.3</b>
BearPaw Installation	p.3
BearPaw Removal	p.5
Weight & Balance	p.5
Parts List	p.6
<b>INSPECTION</b>	<b>p.7</b>
Life Limited Items	p.7
Pre-Flight	p.7
Periodic Inspection Schedule	p.7
300 Hour or Yearly Inspection Details	p.7
Overhaul Requirements	p.8
<b>REVISIONS &amp; APPROVAL</b>	<b>p.8</b>
Annex A (BearPaw Assembly Drawing)	
Annex B (BearPaw Pad Allowable Damage Drawing)	

## INTRODUCTION

### Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw for your Robinson R44.

### General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

**Table 1 – Helitowcart Customer Support**

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 <a href="mailto:info@helitowcart.com">info@helitowcart.com</a>

### Helicopter Effectivity

This installation instruction applies to the following ROBINSON Helicopters:

**Table 2 – Robinson Helicopter Effectivity**

A/C Model	Serial no.	Type Certificate Data Sheet
R44	0271 thru 9999	H11NM
R44 II	1140, 10001 and subsequent	H11NM

### Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

## INSTALLATION

### BearPaw Installation

#### Reference Documentation:

- [1] Robinson R44 - Maintenance Manual & Instruction for Continued Airworthiness. RTR460.
- [2] Annex A – BearPaw Assembly Drawings (112-0001-00-C & 112-0001-00-E)

#### Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);
- Remove aft skid wearshoe & re-install the attaching screws.

#### Step 2: BearPaw Preparation

- With IceBlade Option: Install ice blades (Qty:2) under BearPaw pad as per drawing (112-0001-00) Ref [2];
- With IceBlade Option: Insert washer (Washer P/N 263-0001-17) through threaded part of the ice blade and secure with nut (P/N 262-0001-17);
- Position the BearPaw under skid at the aft intersection with the cross tube as per figure 1 with narrow edge pointing forward.

#### Step 3: BearPaw Set Up

- Insert washers (P/N 263-0001-17) through all four front bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert bolts(P/N261-0002-17) & (261-0003-17) and washer (P/N 263-0001-17) through BearPaw pad as per drawing (112-0001-00) Ref [2]
- If Streamline model, then apply step 3.1. See step 3.1described below.
- Position the BearPaw pad under the skid
- Insert small filler blocks (P/N314-0012-01) & (P/N314-0014-01) at front of BearPaw& Insert filler blocks (P/N314-0015-01) at center of BearPaw as per drawing (112-0001-00) Ref [2];
- The use of filler blocks mentioned above may be increased, decreased, replaced or complemented by the use of washers (P/N 263-0001-17). Bolts (P/N261-0002-17) & (261-0003-17) may be replaced by longer or shorter AN4 bolts as required.
- Insert both U-shaped clips (P/N 314-0006-15) through bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert slotted clip supports (P/N 314-0007-15) through all four bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb.

#### Step 3.1: With the Streamline Version of the Bearpaw (P/N 112-0001-00-E)

- Insert washers (P/N 263-0001-17) through bolts (P/N261-0002-17)
- Insert bolts (P/N261-0002-17) and washer (P/N 263-0001-17) through the rear BearPaw pad as per drawing (112-0001-00-E) Ref [2]
- Insert rear filler block (P/N 314-0022-01) at the rear of BearPaw as per drawing (112-0001-00-E) Ref [2];
- Insert two washers (P/N 263-0001-17) per bolts (P/N261-0002-17) (four washers total)
- Insert Low U-shaped clip (P/N 314-0023-15) through bolts: (P/N261-0002-17) as per drawing (112-0001-00-E) Ref [2];
- Insert slotted clip supports (P/N 314-0007-15) through bolts. Position slotted clip supports with rounded edge toward helicopter skid;

- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Bolts (P/N261-0002-17) may be replaced by longer or shorter AN4 bolts as required. Max. torque on nuts 60 in.-lb.

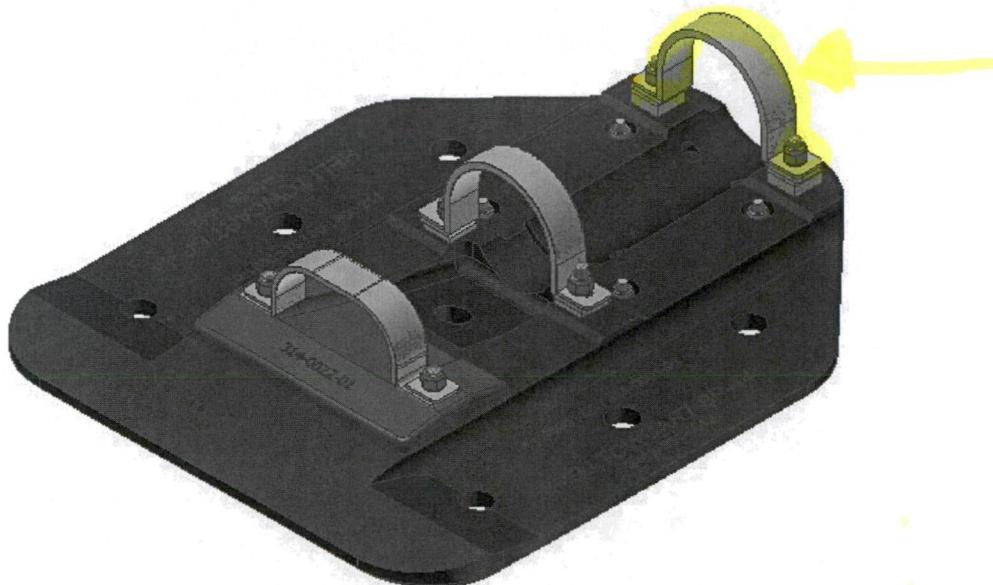
Step 4: Final Step

- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 - Installed BearPaw Model BP44 (112-0001-00-C)



Figure 2 - BearPaw Model BP44 Streamline (112-0001-00-E)



### **BearPaw Removal**

#### **Step 1: Helicopter Preparation**

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

#### **Step 2: BearPaw Removal**

- Remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15) and U-shaped clips (P/N 314-0006-15);
- With the Streamline Version of the Bearpaw (P/N 112-0001-00-E) remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15) and rear U-shaped clips (P/N 314-0023-15);
- Remove BearPaw pad (P/N 314-0001-01);
- Inspect skid tubes to confirm serviceability;
- Re-install aft wearshoe with screws as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required.

### **Weight & Balance**

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

**Table 3 – Weight & Balance Data**

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP44	5.9 Lb 2.7 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	758.1 in-lb 8.8 m-kg
Helitowcart BearPaw Model BP44 - Streamline	7.0 Lb 3.2 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	889.5 in-lb 10.4 m-kg

### Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

**Table 4 – Parts List**

Description	Qty	Part No.	Name (Drawing no.)
<b>BearPaw Model BP44</b>	<b>1</b>	<b>112-0001-00</b>	<b>112-0001-00-C / BearPaw Assembly</b> <b>112-0001-00-E / BearPaw Streamline Assembly</b>
BearPaw pad	1	314-0001-01	314-0001-01-A / BearPaw – Pad (VNR088) 314-0001-01-B / BearPaw – Pad Streamline
Low U Shaped Clips	1	314-0023-15	BearPaw - Low U Shaped Clips
U Shaped Clips	2	314-0006-15	BearPaw - U Shaped Clips (VNR087)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks rear	1	314-0022-01	BearPaw – Filler block Rear
Filler blocks 1/4"	2	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Filler blocks 3/32"	2	314-0014-01	BearPaw – Filler block 3/32" (VNR103)
Filler blocks 1/8"	2	314-0015-01	BearPaw – Filler block 1/8" (VNR104)
Bolts	2 *(+2)	261-0002-17	Bolt- AN4-15 *Note: for Streamline Assembly
Bolts	2	261-0003-17	Bolt- AN4-16
Nuts	4 *(+2)	262-0001-17	Nut- MS20-365-428 *Note: +2 for Streamline Assembly
Washers	8 *(+8)	263-0001-17	Washer – AN960-416 *Note: +8 for Streamline Assembly
Shrink	3	314-0016-00	BearPaw – Shrink Specifications & Installation
<b>IceBlade Option Model OIB</b>	<b>2</b>	<b>314-0005-15</b>	<b>VNR086 / IceBlade Assembly</b>
Nuts	4	262-0001-17	Nut- MS20-365-428
Washers	4	263-0001-17	Washer – AN960-416

## INSPECTION

### Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

### Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:

Table 5 – Tolerances for cracks & wear;

Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2) or

Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

### Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 300 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the R44 landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 300 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

### 300 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section “BearPaw Removal”,
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:  
 Table 5 – Tolerances for cracks & wear;  
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2); or  
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

**Table 5 – Tolerances for Cracks & Wear**

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,350	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Stiffeners:</u> NO cracks in stiffeners.  <u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,350	0,050	

E	N/A	N/A	No cracks allowed in zone E
F	0,350	0,050	For P/N 314-0001-01-B Only
G	0,75	0,050	For P/N 314-0001-01-B Only

### Overhaul Requirements

- Not applicable for the designated application of this device.

## REVISIONS & APPROVAL

### Revisions

Date	Rev	Nature of Revisions
April 15, 2010	D	Addition of a rear U shaped clip in the Streamline BearPaw Pad configuration.
October 22, 2009	C	Introduction of new streamline BearPaw Pad configuration as alternate.
September 7, 2006	B	- Added filler blocks and heat shrink to product list. - Modified recommended bolt models (lengthened) - Revised inspection requirements from 100 hour to 300 hour intervals. - Identification of the IceBlade assembly as an optional feature.
June 12, 2006	A	Initial issue

### Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	April 15, 2010
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	April 15, 2010

### Annex A

See: BearPaw Assembly, drawing no. 112-0001-00-C  
BearPaw Streamline Assembly, drawing no. 112-0001-00-E

### Annex B

See: BearPaw Pad Allowable Damage Drawing, drawing no. 314-0001-01-A (VNR088) page 2 of 2.  
BearPaw Streamline Allowable Damage Drawing, drawing no. 314-0001-01-B page 3 of 3)



314-0011-00 Rev D  
BearPaw Model BP44  
Installation Instructions - R44

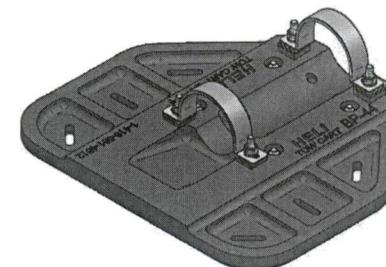
#### Annex A

BearPaw Assembly, Drawing no. 112-0001-00-C  
BearPaw Streamline Assembly, Drawing no. 112-0001-00-E



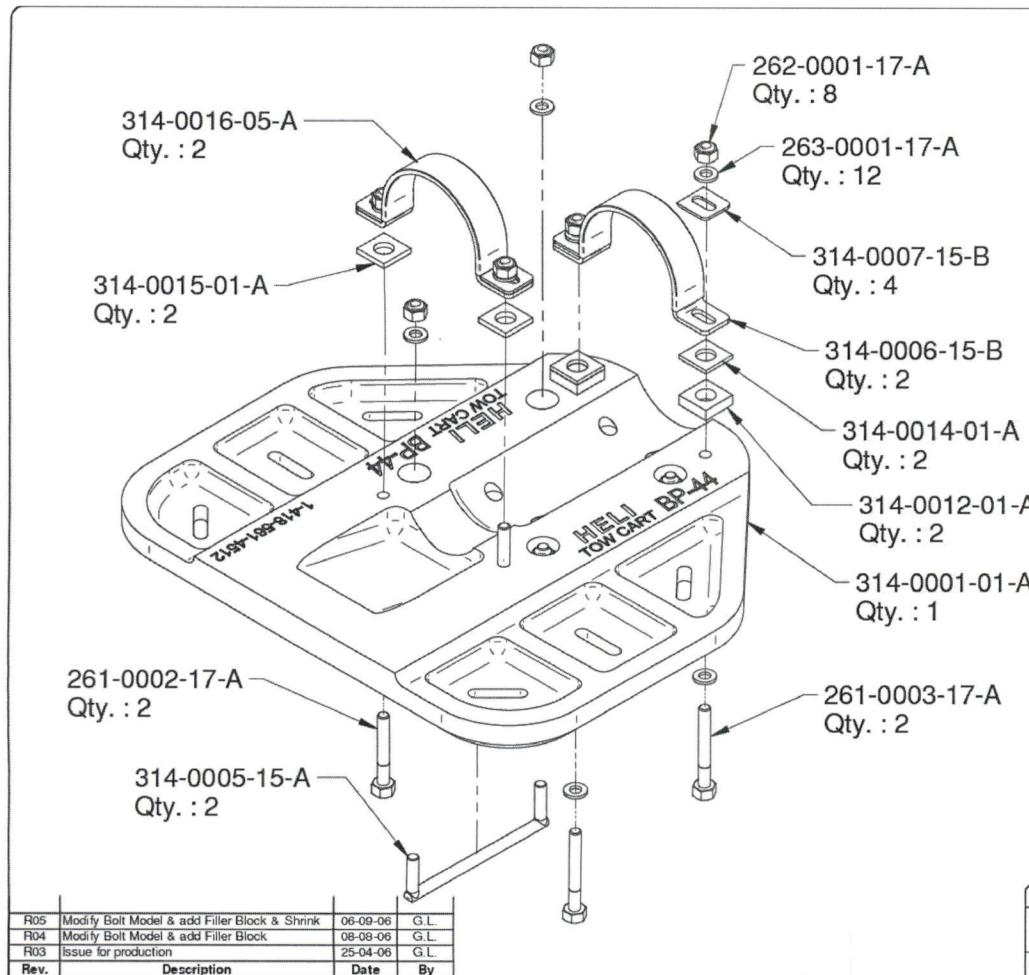
**314-0011-00 Rev D**  
**BearPaw Model BP44**  
**Installation Instructions - R44**

Baal Hamule B'Hatz



**NOTE : Iceblade assembly can be omitted from installation (Optional)**

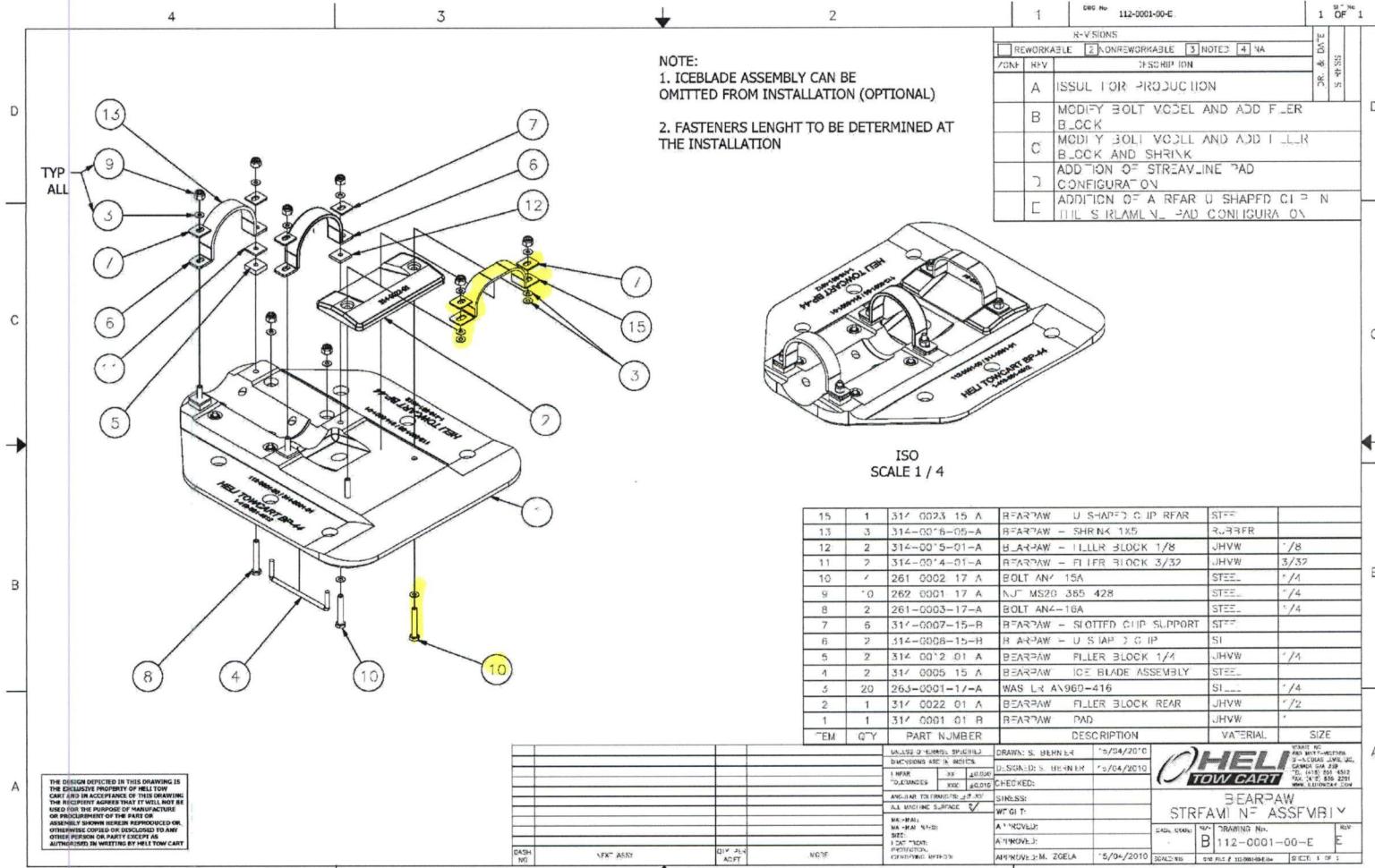
Nº	Qty	Description	Part #
1'	1	Bearpaw - Pad	314-0001-01-A
2'	2	Bearpaw - Iceblade assembly	314-0005-15-A
3'	2	Bearpaw - U Shaped clip	314-0006-15-B
4"	4	Bearpaw - Slotted clip support	314-0007-15-B
5"	8	Nut MS20-365-428	262-0001-17-A
6"	12	Washer AN960-416	263-0001-17-A
7"	2	Bolt AN4-15A	261-0002-17-A
8"	2	Bearpaw - Filler Block 1/4"	314-0012-01-A
9"	2	Bolt AN4-16A	261-0003-17-A
10"	2	Bearpaw - Shrink T"X5"	314-0016-05-A
11"	2	Bearpaw - Filler Block 1/8"	314-0015-01-A
12"	2	Bearpaw - Filler Block 3/32"	314-0014-01-A



		<b>Vanair Inc.</b> 860, Avenue des St-Nicolas, Lévis (Québec) Canada, G1A 2G9 Tel.: (416) 836-2200 Fax: (416) 836-2291 <a href="http://www.helitowcart.com">www.helitowcart.com</a>		
<b>PROPERTY DOCUMENT IS PROPRIÉTÉ DE VANAIR INC. WRITTEN REPRESENTATIVES OF VANAIR INC. SHALL BE DRAFTED AND TO BE APPROVED BY THE MODIFYING.</b>				
<b>TOLERANCES</b>		<b>Bearpaw Assembly</b>		<b>Master or Model:</b>
<b>1X ± 1/8"</b> <b>X.XX ± 0.010"</b> <b>XXXX ± 0.008"</b> <b>ANGLE ± 1°</b>		<b>Date: (yyyy-mm-dd)</b> <b>G. Lapointe</b> <b>Verifier par / Checked by:</b> <b>Date: (yyyy-mm-dd)</b>	<b>Format:</b> <b>Echelle / Scale:</b> <b>N/A</b>	<b>(Page X of Y)</b> <b>1 de 1</b> <b>R05</b>
<b>REVISION</b> <input type="checkbox"/> <input checked="" type="checkbox"/>		<b>Approved per / Approved by:</b> <b>Date: (yyyy-mm-dd)</b>	<b>Numero de pièce / Part Number:</b> <b>VNR083</b>	<b>Reutl.</b> <b>112-0001-00-C</b>

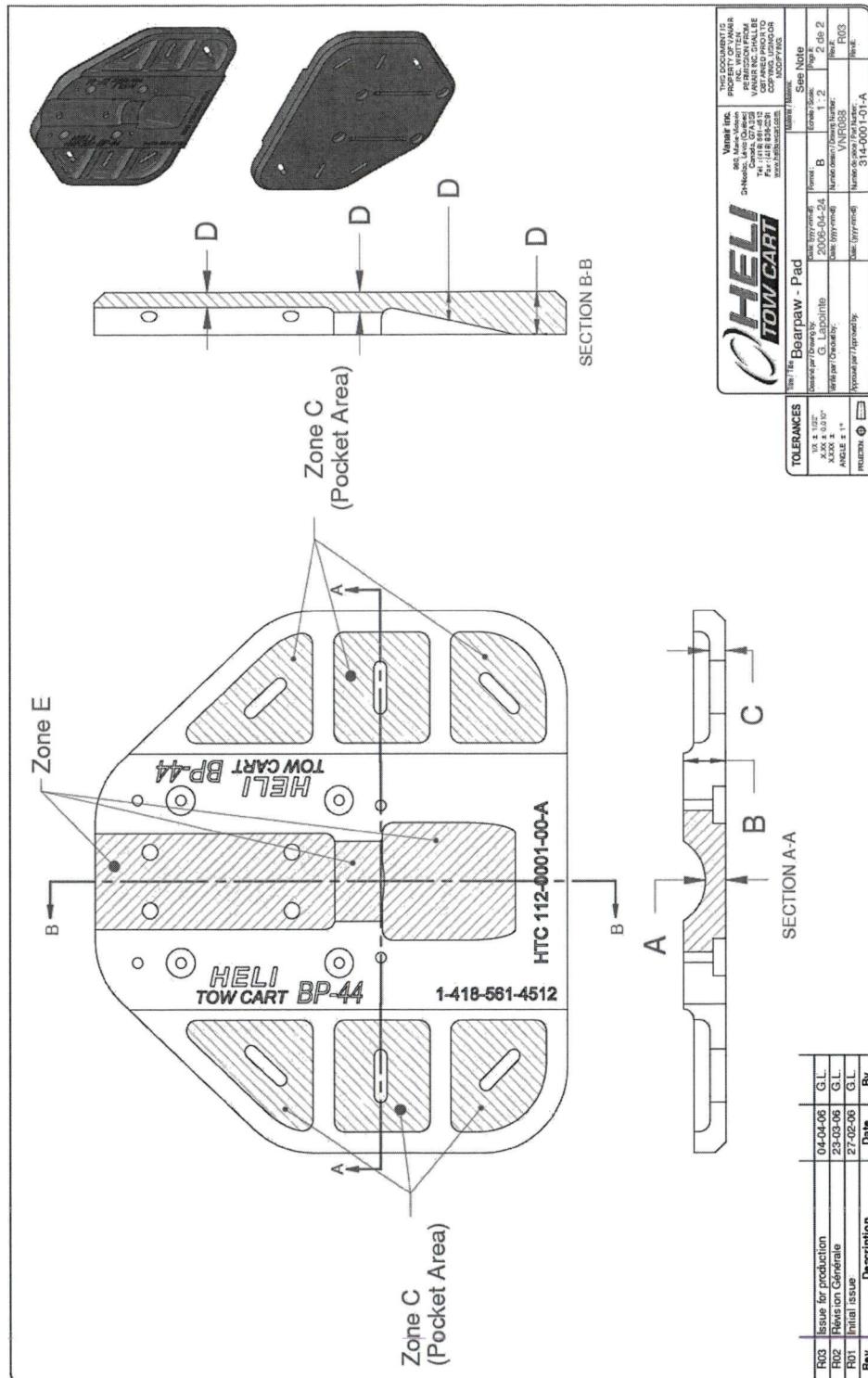


**314-0011-00 Rev D  
BearPaw Model BP44  
Installation Instructions - R44**



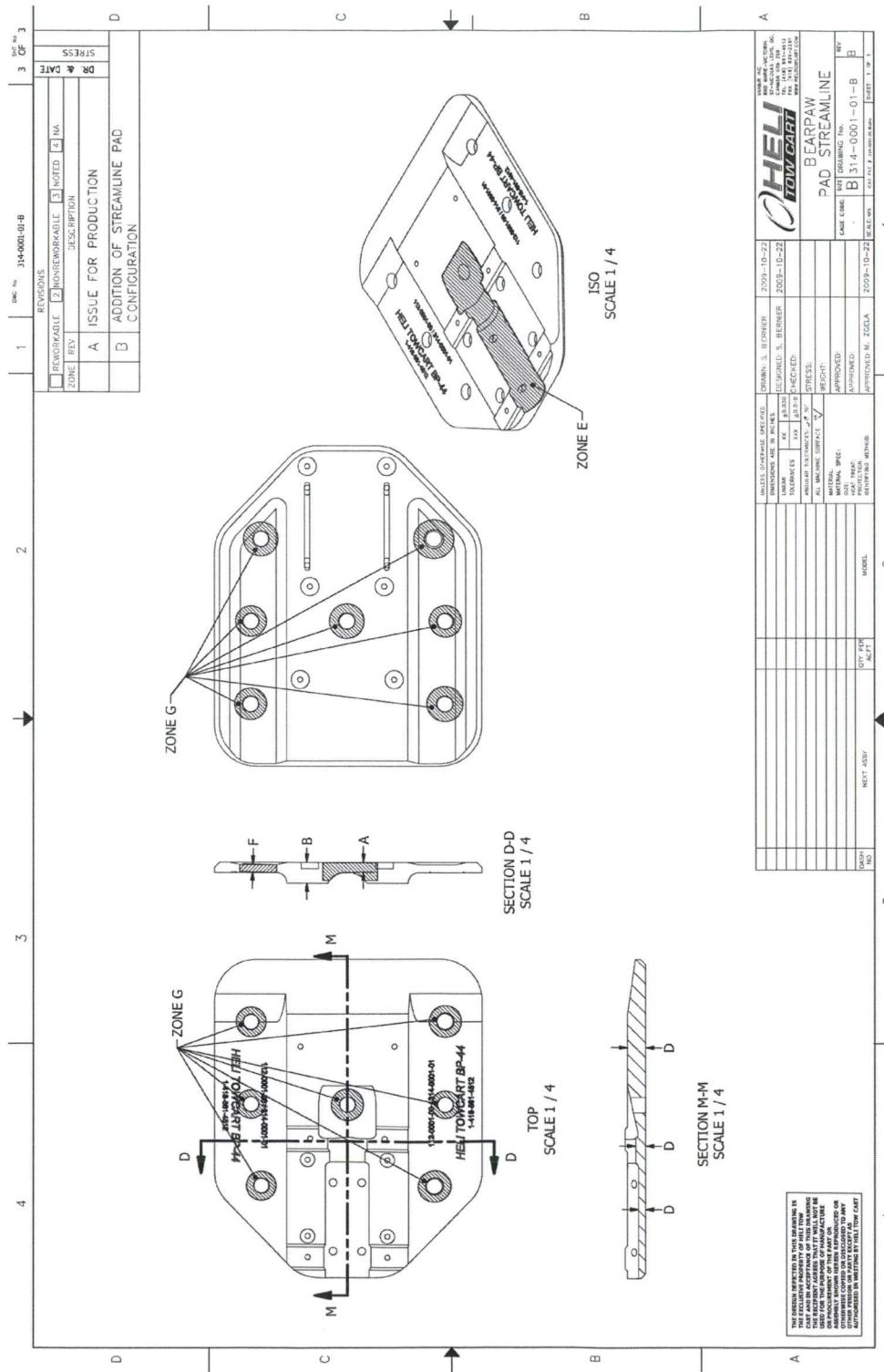
### **Annex B**

BearPaw Pad Allowable Damage Drawing, Drawing no. 314-0001-01-A (VNR088), Page 2 of 2  
BearPaw Streamline Allowable Damage Drawing, Drawing no. 314-0001-01-B, Page 3 of 3





314-0011-00 Rev D  
BearPaw Model BP44  
Installation Instructions - R44





## Master Document List

Helitowcart Inc.

### Robinson R44 Helicopters Installation of BearPaw Model BP44

Report: HTC-MDL-BP-R44-1000 (Rev C)

PREPARED BY:

DATE: APR 15, 2010

Simon Bernier  
Staff Specialist - Structures

APPROVED BY:

DATE: APR 15, 2010

Mirko Zgela  
Design Approval Representative DAR #310

Revision	Revision Date	Revision of Entry	Entered by
C	2010 04 15	Addition of a rear U shaped clip in the streamline BearPaw Pad configuration	S. Bernier
B	2009 10 22	Introduction of new streamline BearPaw Pad configuration as alternate	S. Bernier
A	2006 09 07	Drawings are added to include the provision of shims during the installation.	N. Barbeau



## 1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-R44-1000	Compliance Plan - Robinson R44 Helicopters -Installation of Bear Paw Model BP44	NC	DAR 310	July 4, 2006
314-0011-00	BearPaw Model BP44 – Installation Instructions - R44	D	DAR 310	Apr 15, 2010
AAC-STR-BP-R44-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP44	NC	DAR 310	July 4, 2006
AAC-FTR-C-FBLO	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Aug 4, 2006
HTC-TM-BP-R44-1000	Structural Substantiation - BearPaw Streamline BP44	NC	DAR 310	Oct 22, 2009
ATS-EO-BP-R44-1000	Engineering Order - BearPaw Streamline BP44	NC	DAR 310	Apr 15, 2010

## 2.0 MASTER DRAWINGS

Drawings # / P/N	Title	Revision Status	Approval by	Date
112-0001-01-C	BearPaw Assembly	C	DAR 310	Sept 6, 2006
112-0001-01-E	BearPaw Streamline Assembly	E	DAR 310	Apr 15, 2010
314-0002-15-A	BearPaw – Iceblade	A	DAR 310	Apr 24, 2006
314-0004-15-A	BearPaw – Iceblade Threaded Rod	A	DAR 310	Apr 24, 2006
314-0005-15-A	BearPaw – Iceblade Assembly	A	DAR 310	Apr 24, 2006
314-0001-01-A	BearPaw - Pad	A	DAR 310	Apr 24, 2006
314-0001-01-B	BearPaw – Pad Streamline	B	DAR 310	Oct 22, 2009
314-0006-15-B	BearPaw – U Shaped Clip	B	DAR 310	July 31, 2006
314-0023-15-A	BearPaw – Low U Shaped Clip	A	DAR 310	Apr 15, 2010
314-0007-15-B	Bearpaw – Slotted Clip Support	B	DAR 310	July 31, 2006
314-0012-01-A	Filler Block 1/4"	A	DAR 310	Aug 8, 2006
314-0014-01-A	Filler Block 3/32"	A	DAR 310	Sept 6, 2006
314-0015-01-A	Filler Block 1/8"	A	DAR 310	Sept 6, 2006
314-0022-01-A	Filler Block Rear	A	DAR 310	Oct 22, 2009



### 3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01-A	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01-A	Propriétés du UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05-A	Heat Shrink Specifications	A	N/A	Sept 6, 2006

## Master Document List

Helitowcart Inc.

### Robinson R44 Helicopters Installation of BearPaw Model BP44

Report: HTC-MDL-BP-R44-1000 (Rev B)

PREPARED BY:

  
Simon Bernier

Staff Specialist - Structures

DATE: OCT 22, 2009

APPROVED BY:

  
Mirko Zgela

Design Approval Representative DAR #310

DATE: OCT 22, 2009

Revision	Revision Date	Revision of Entry	Entered by
B	2009 10 22	Introduction of new streamline BearPaw Pad configuration as alternate	S. Bernier
A	2006 09 07	Drawings are added to include the provision of shims during the installation.	N. Barbeau

## 1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-R44-1000	Compliance Plan - Robinson R44 Helicopters -Installation of Bear Paw Model BP44	NC	DAR 310	July 4, 2006
314-0011-00-A	BearPaw Model BP44 – Installation Instructions - R44	C	DAR 310	Oct 22, 2009
AAC-STR-BP-R44-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP44	NC	DAR 310	July 4, 2006
AAC-FTR-C-FBLO	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Aug 4, 2006
HTC-TM-BP-R44-1000	Structural Substantiation - BearPaw Streamline BP44	NC	DAR 310	Oct 22, 2009

## 2.0 MASTER DRAWINGS

Drawings # / P/N	Title	Revision Status	Approval by	Date
112-0001-01-C	BearPaw Assembly	C	DAR 310	Sept 6, 2006
112-0001-01-D	BearPaw Streamline Assembly	D	DAR 310	Oct 22, 2009
314-0002-15-A	BearPaw – Iceblade	A	DAR 310	Apr 24, 2006
314-0004-15-A	BearPaw – Iceblade Threaded Rod	A	DAR 310	Apr 24, 2006
314-0005-15-A	BearPaw – Iceblade Assembly	A	DAR 310	Apr 24, 2006
314-0001-01-A	BearPaw - Pad	A	DAR 310	Apr 24, 2006
314-0001-01-B	BearPaw – Pad Streamline	B	DAR 310	Oct 22, 2009
314-0006-15-B	BearPaw – U Shaped Clip	B	DAR 310	July 31, 2006
314-0007-15-B	Bearpaw – Slotted Clip Support	B	DAR 310	July 31, 2006
314-0012-01-A	Filler Block 1/4"	A	DAR 310	Aug 8, 2006
314-0014-01-A	Filler Block 3/32"	A	DAR 310	Sept 6, 2006
314-0015-01-A	Filler Block 1/8"	A	DAR 310	Sept 6, 2006
314-0022-01-A	Filler Block Rear	A	DAR 310	Oct 22, 2009



### 3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01-A	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01-A	Propriétés du UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05-A	Heat Shrink Specifications	A	N/A	Sept 6, 2006

314-0011-00 Rev D



BY VANAIR

314-0011-00 Rev D  
BearPaw Model BP44  
Installation Instructions - R44

TABLE OF CONTENTS:

<b>INTRODUCTION</b>	<b>p.2</b>
Scope	p.2
General	p.2
Helicopter Effectivity	p.2
Installer Responsibilities	p.2
<b>INSTALLATION</b>	<b>p.3</b>
BearPaw Installation	p.3
BearPaw Removal	p.5
Weight & Balance	p.5
Parts List	p.6
<b>INSPECTION</b>	<b>p.7</b>
Life Limited Items	p.7
Pre-Flight	p.7
Periodic Inspection Schedule	p.7
300 Hour or Yearly Inspection Details	p.7
Overhaul Requirements	p.8
<b>REVISIONS &amp; APPROVAL</b>	<b>p.8</b>
Annex A (BearPaw Assembly Drawing)	
Annex B (BearPaw Pad Allowable Damage Drawing)	

## INTRODUCTION

### Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw for your Robinson R44.

### General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

**Table 1 – Helitowcart Customer Support**

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 <a href="mailto:info@helitowcart.com">info@helitowcart.com</a>

### Helicopter Effectivity

This installation instruction applies to the following ROBINSON Helicopters:

**Table 2 – Robinson Helicopter Effectivity**

A/C Model	Serial no.	Type Certificate Data Sheet
R44	0271 thru 9999	H11NM
R44 II	1140, 10001 and subsequent	H11NM

### Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

## INSTALLATION

### BearPaw Installation

#### Reference Documentation:

- [1] Robinson R44 - Maintenance Manual & Instruction for Continued Airworthiness. RTR460.
- [2] Annex A – BearPaw Assembly Drawings (112-0001-00-C & 112-0001-00-E)

#### Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);
- Remove aft skid wearshoe & re-install the attaching screws.

#### Step 2: BearPaw Preparation

- With IceBlade Option: Install ice blades (Qty:2) under BearPaw pad as per drawing (112-0001-00) Ref [2];
- With IceBlade Option: Insert washer (Washer P/N 263-0001-17) through threaded part of the ice blade and secure with nut (P/N 262-0001-17);
- Position the BearPaw under skid at the aft intersection with the cross tube as per figure 1 with narrow edge pointing forward.

#### Step 3: BearPaw Set Up

- Insert washers (P/N 263-0001-17) through all four front bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert bolts(P/N261-0002-17) & (261-0003-17) and washer (P/N 263-0001-17) through BearPaw pad as per drawing (112-0001-00) Ref [2]
- If Streamline model, then apply step 3.1. See step 3.1described below.
- Position the BearPaw pad under the skid
- Insert small filler blocks (P/N314-0012-01) & (P/N314-0014-01) at front of BearPaw& Insert filler blocks (P/N314-0015-01) at center of BearPaw as per drawing (112-0001-00) Ref [2];
- The use of filler blocks mentioned above may be increased, decreased, replaced or complemented by the use of washers (P/N 263-0001-17). Bolts (P/N261-0002-17) & (261-0003-17) may be replaced by longer or shorter AN4 bolts as required.
- Insert both U-shaped clips (P/N 314-0006-15) through bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert slotted clip supports (P/N 314-0007-15) through all four bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb.

#### Step 3.1: With the Streamline Version of the Bearpaw (P/N 112-0001-00-E)

- Insert washers (P/N 263-0001-17) through bolts (P/N261-0002-17)
- Insert bolts (P/N261-0002-17) and washer (P/N 263-0001-17) through the rear BearPaw pad as per drawing (112-0001-00-E) Ref [2]
- Insert rear filler block (P/N 314-0022-01) at the rear of BearPaw as per drawing (112-0001-00-E) Ref [2];
- Insert two washers (P/N 263-0001-17) per bolts (P/N261-0002-17) (four washers total)
- Insert Low U-shaped clip (P/N 314-0023-15) through bolts: (P/N261-0002-17) as per drawing (112-0001-00-E) Ref [2];
- Insert slotted clip supports (P/N 314-0007-15) through bolts. Position slotted clip supports with rounded edge toward helicopter skid;

- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Bolts (P/N261-0002-17) may be replaced by longer or shorter AN4 bolts as required. Max. torque on nuts 60 in.-lb.

Step 4: Final Step

- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 - Installed BearPaw Model BP44 (112-0001-00-C)

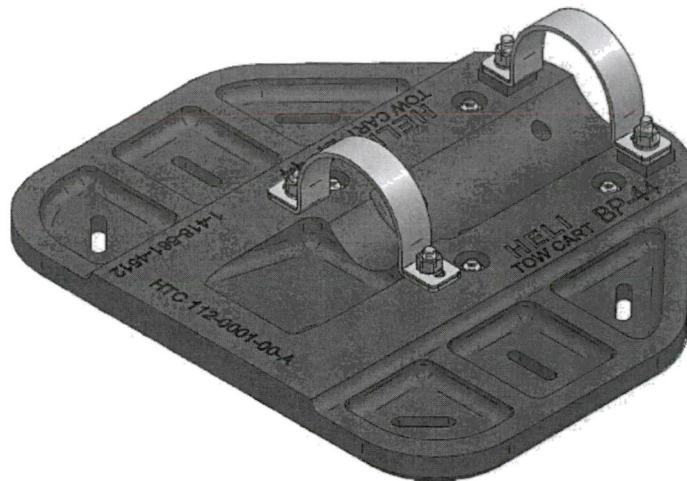
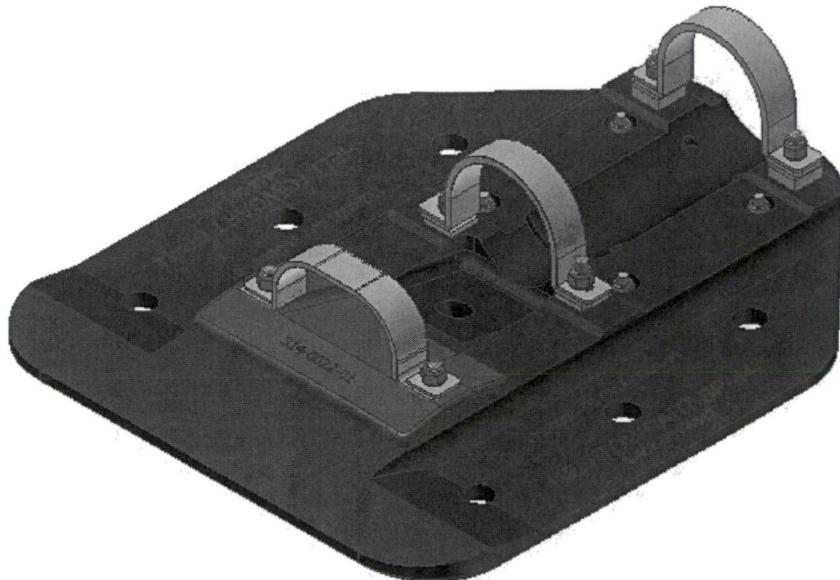


Figure 2 - BearPaw Model BP44 Streamline (112-0001-00-E)



### **BearPaw Removal**

#### **Step 1: Helicopter Preparation**

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

#### **Step 2: BearPaw Removal**

- Remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15) and U-shaped clips (P/N 314-0006-15);
- With the Streamline Version of the Bearpaw (P/N 112-0001-00-E) remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15) and rear U-shaped clips (P/N 314-0023-15);
- Remove BearPaw pad (P/N 314-0001-01);
- Inspect skid tubes to confirm serviceability;
- Re-install aft wearshoe with screws as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required.

### **Weight & Balance**

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

**Table 3 – Weight & Balance Data**

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP44	5.9 Lb 2.7 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	758.1 in-lb 8.8 m-kg
Helitowcart BearPaw Model BP44 - Streamline	7.0 Lb 3.2 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	889.5 in-lb 10.4 m-kg

### Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

**Table 4 – Parts List**

Description	Qty	Part No.	Name (Drawing no.)
<b>BearPaw Model BP44</b>	<b>1</b>	<b>112-0001-00</b>	<b>112-0001-00-C / BearPaw Assembly 112-0001-00-E / BearPaw Streamline Assembly</b>
BearPaw pad	1	314-0001-01	314-0001-01-A / BearPaw – Pad (VNR088) 314-0001-01-B / BearPaw – Pad Streamline
Low U Shaped Clips	1	314-0023-15	BearPaw - Low U Shaped Clips
U Shaped Clips	2	314-0006-15	BearPaw - U Shaped Clips (VNR087)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks rear	1	314-0022-01	BearPaw – Filler block Rear
Filler blocks 1/4"	2	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Filler blocks 3/32"	2	314-0014-01	BearPaw – Filler block 3/32" (VNR103)
Filler blocks 1/8"	2	314-0015-01	BearPaw – Filler block 1/8" (VNR104)
Bolts	2 *(+2)	261-0002-17	Bolt- AN4-15 *Note: for Streamline Assembly
Bolts	2	261-0003-17	Bolt- AN4-16
Nuts	4 *(+2)	262-0001-17	Nut- MS20-365-428 *Note: +2 for Streamline Assembly
Washers	8 *(+8)	263-0001-17	Washer – AN960-416 *Note: +8 for Streamline Assembly
Shrink	3	314-0016-00	BearPaw – Shrink Specifications & Installation
<b>IceBlade Option Model OIB</b>	<b>2</b>	<b>314-0005-15</b>	<b>VNR086 / IceBlade Assembly</b>
Nuts	4	262-0001-17	Nut- MS20-365-428
Washers	4	263-0001-17	Washer – AN960-416

## INSPECTION

### Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

### Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:  
 Table 5 – Tolerances for cracks & wear;  
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2) or  
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

### Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 300 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the R44 landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 300 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

### 300 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section “BearPaw Removal”,
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:  
 Table 5 – Tolerances for cracks & wear;  
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2); or  
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

**Table 5 – Tolerances for Cracks & Wear**

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,350	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Stiffeners:</u> NO cracks in stiffeners.  <u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,350	0,050	



314-0011-00 Rev D  
BearPaw Model BP44  
Installation Instructions - R44

E	N/A	N/A	No cracks allowed in zone E
F	0,350	0,050	For P/N 314-0001-01-B Only
G	0,75	0,050	For P/N 314-0001-01-B Only

#### Overhaul Requirements

- Not applicable for the designated application of this device.

#### REVISIONS & APPROVAL

##### Rewvisions

Date	Rev	Nature of Revisions
April 15, 2010	D	Addition of a rear U shaped clip in the Streamline BearPaw Pad configuration.
October 22, 2009	C	Introduction of new streamline BearPaw Pad configuration as alternate.
September 7, 2006	B	- Added filler blocks and heat shrink to product list. - Modified recommended bolt models (lengthened) - Revised inspection requirements from 100 hour to 300 hour intervals. - Identification of the IceBlade assembly as an optional feature.
June 12, 2006	A	Initial issue

#### Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	April 15, 2010
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	April 15, 2010

#### Annex A

See: BearPaw Assembly, drawing no. 112-0001-00-C  
BearPaw Streamline Assembly, drawing no. 112-0001-00-E

#### Annex B

See: BearPaw Pad Allowable Damage Drawing, drawing no. 314-0001-01-A (VNR088) page 2 of 2.  
BearPaw Streamline Allowable Damage Drawing, drawing no. 314-0001-01-B page 3 of 3)



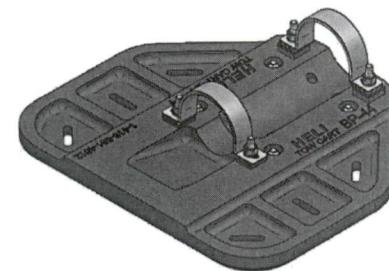
314-0011-00 Rev D  
BearPaw Model BP44  
Installation Instructions - R44

**Annex A**

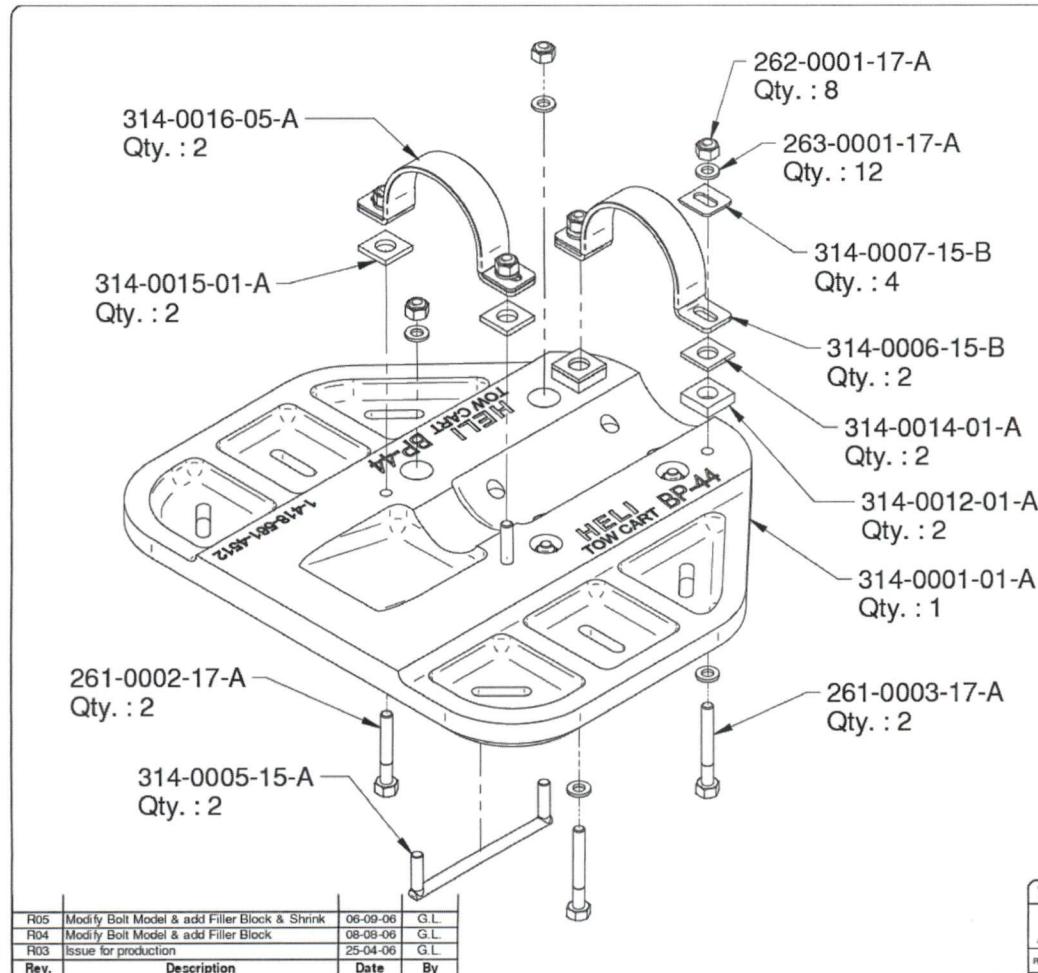
BearPaw Assembly, Drawing no. 112-0001-00-C  
BearPaw Streamline Assembly, Drawing no. 112-0001-00-E



## 314-0011-00 Rev D BearPaw Model BP44 Installation Instructions - R44



N°	Qty	Description	Part #
1'	1	Bearpaw - Pad	314-0001-01-A
2'	2	Bearpaw - Iceblade assembly	314-0005-15-A
3'	2	Bearpaw - U Shaped clip	314-0006-15-B
4'	4	Bearpaw - Slotted clip support	314-0007-15-B
5'	8	Nut MS20-365-428	262-0001-17-A
6'	12	Washer AN90-416	263-0001-17-A
7'	2	Bolt AN4-15A	261-0002-17-A
8'	2	Bearpaw - Filler Block 1/4"	314-0012-01-A
9'	2	Bolt AN4-16A	261-0003-17-A
10'	2	Bearpaw - Shrink Tx5"	314-0016-05-A
11'	2	Bearpaw - Filler Block 1/8"	314-0015-01-A
12'	2	Bearpaw - Filler Block 3/32"	314-0014-01-A

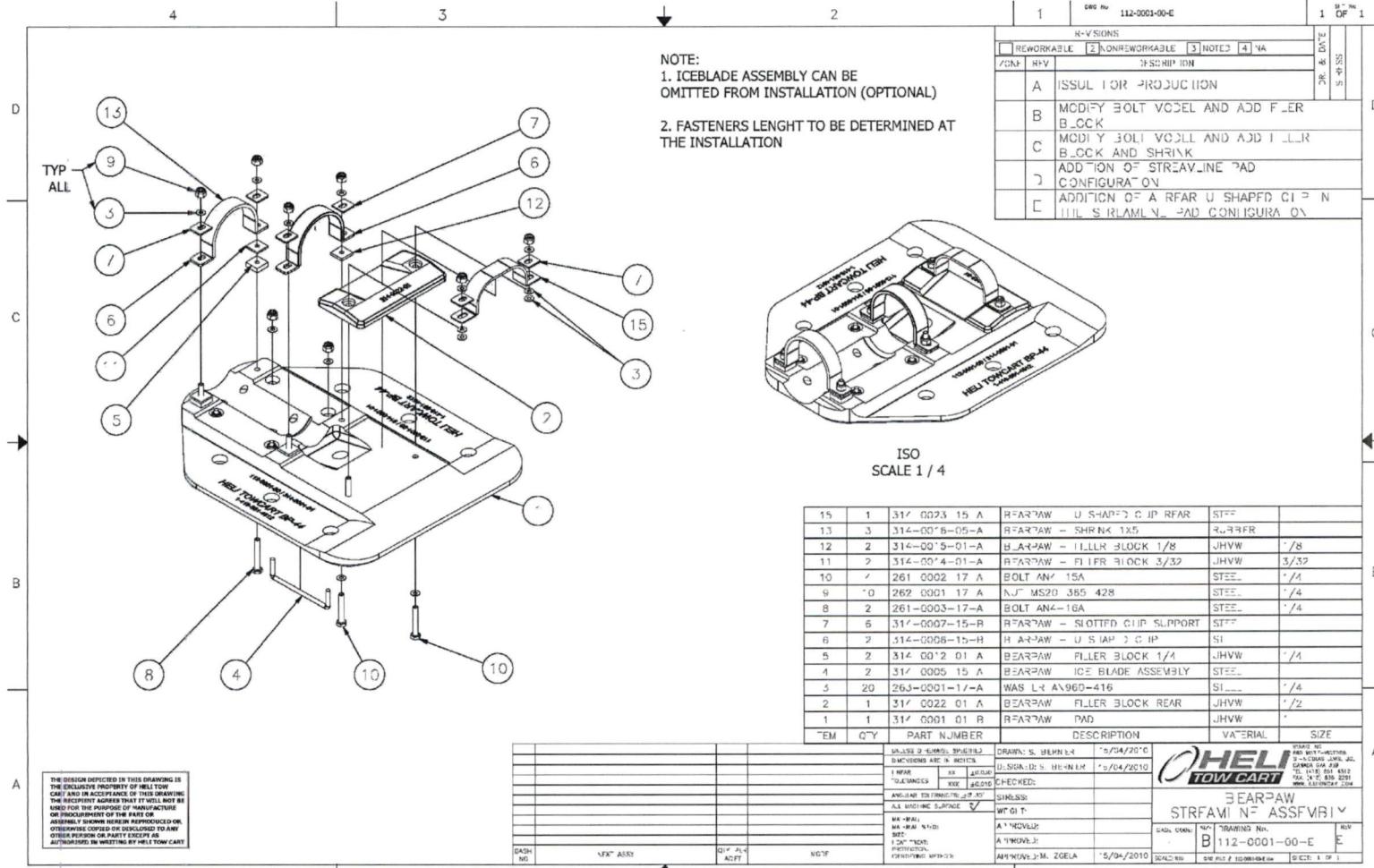


NOTE : Iceblade assembly can be omitted from installation (Optional)



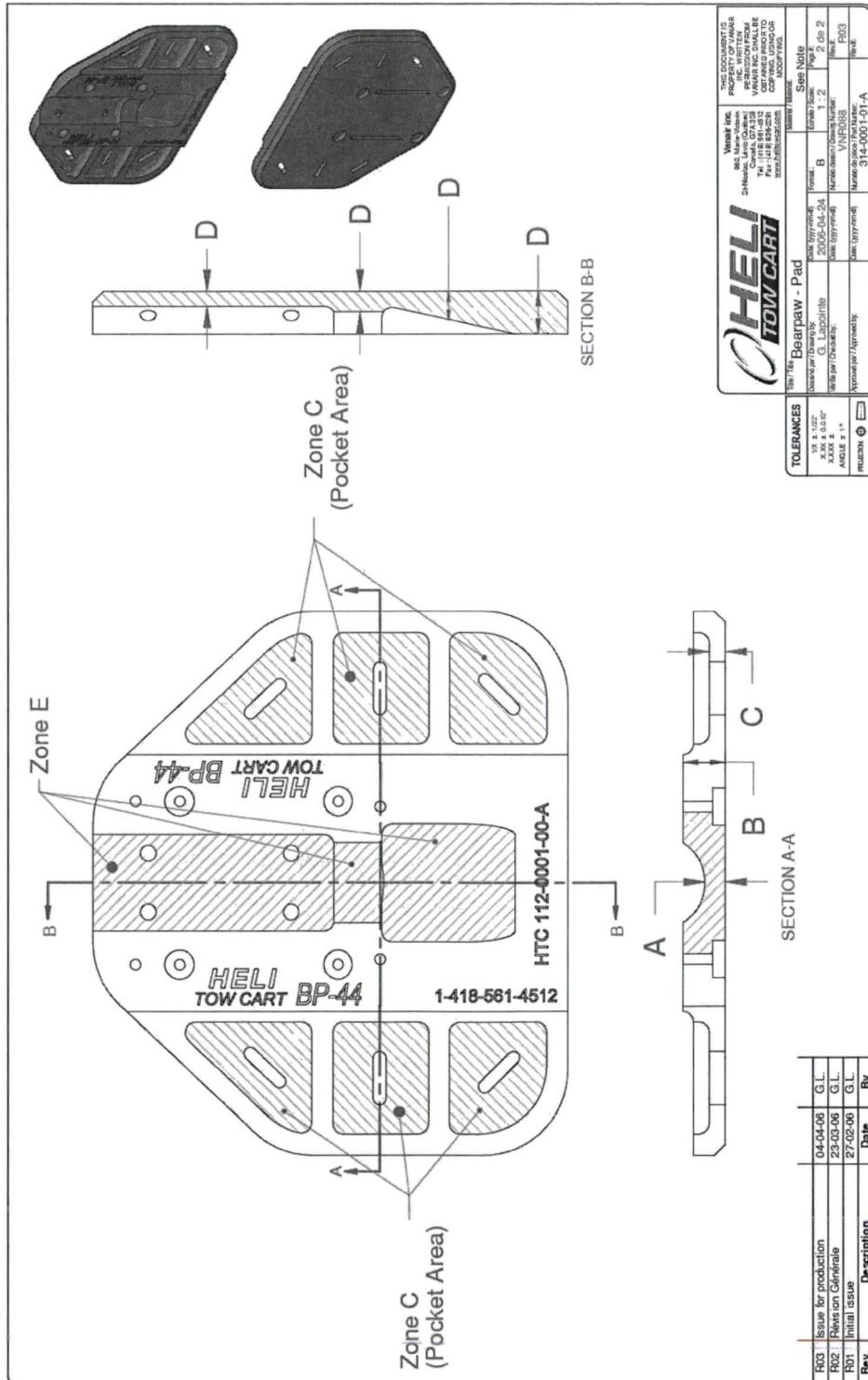
TOLERANCES		Drawing / Materiel	
Dessiné par / Drawing by: G. Lapointe		Date: (yyyy-mm-dd) 2006-04-25	Format : B Echelle / Scale: N/A Page #: 1 de 1
Modifié par / Checked by: G. Lapointe		Date: (yyyy-mm-dd) 2006-04-25	Revised by: R05
Approuvé par / Approved by: G. Lapointe		Date: (yyyy-mm-dd) 2006-04-25	Number de pièce / Part Number: 112-0001-00-C
REVISIONS		REVISED BY	

**314-0011-00 Rev D**  
**BearPaw Model BP44**  
**Installation Instructions - R44**



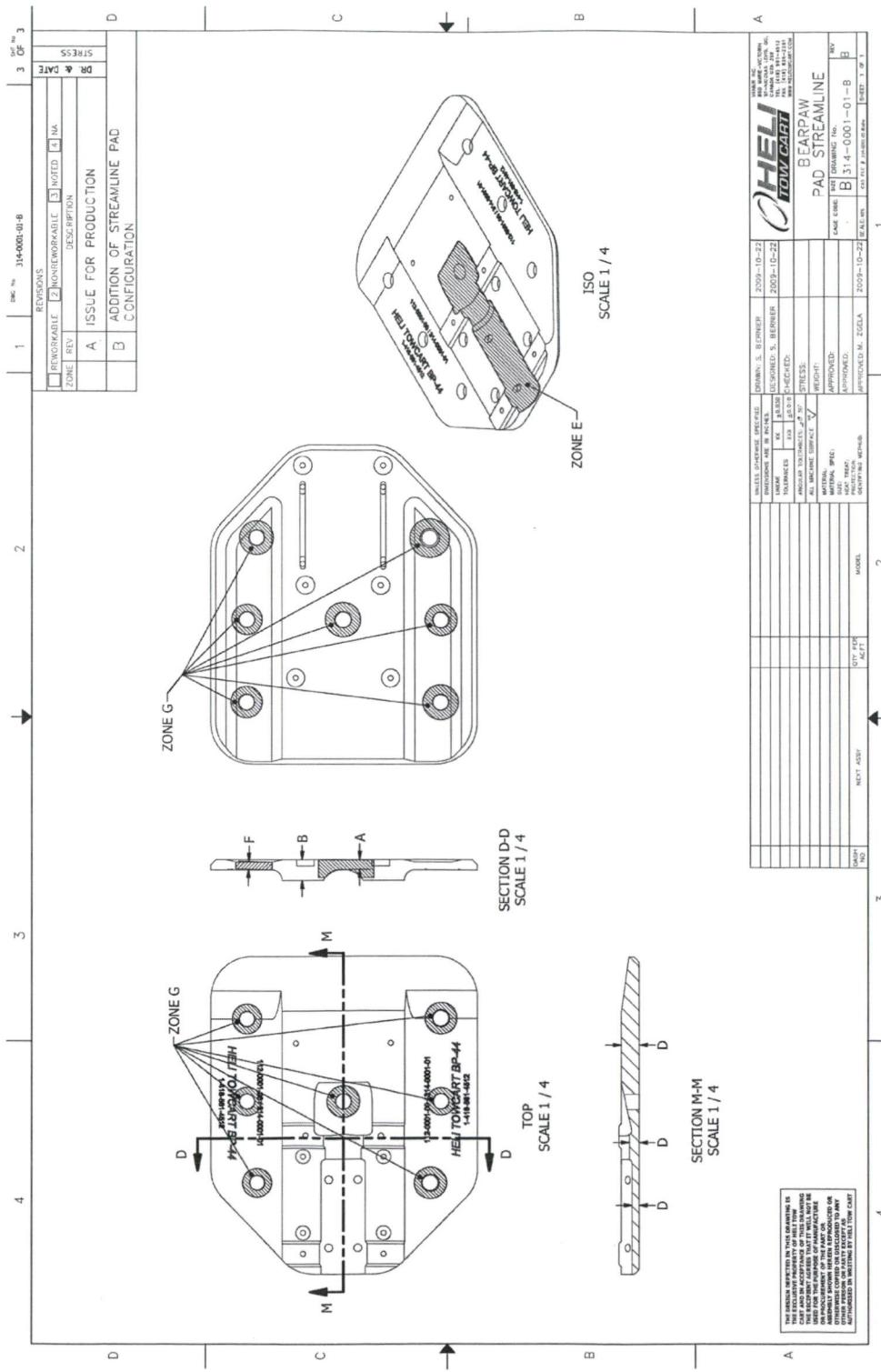
### **Annex B**

BearPaw Pad Allowable Damage Drawing, Drawing no. 314-0001-01-A (VNR088), Page 2 of 2  
BearPaw Streamline Allowable Damage Drawing, Drawing no. 314-0001-01-B, Page 3 of 3





314-0011-00 Rev D  
BearPaw Model BP44  
Installation Instructions - R44



Page 14 of 14

Tel: 1-418-561-4512, Fax: 1-418-836-2291, 860 Marie-Victorin, Saint-Nicolas, Levis, Quebec, Canada G7A 3S9.  
[www.helitowcart.com](http://www.helitowcart.com) info@helitowcart.com

314-0011-00-C



314-0011-00-A Rev C  
BearPaw Model BP44  
Installation Instructions - R44

TABLE OF CONTENTS:

<b>INTRODUCTION</b>	p.2
Scope	p.2
General	p.2
Helicopter Effectivity	p.2
Installer Responsibilities	p.2
<b>INSTALLATION</b>	p.3
BearPaw Installation	p.3
BearPaw Removal	p.5
Weight & Balance	p.5
Parts List	p.6
<b>INSPECTION</b>	p.7
Life Limited Items	p.7
Pre-Flight	p.7
Periodic Inspection Schedule	p.7
300 Hour or Yearly Inspection Details	p.7
Overhaul Requirements	p.8
<b>REVISIONS &amp; APPROVAL</b>	p.8
Annex A (BearPaw Assembly Drawing)	
Annex B (BearPaw Pad Allowable Damage Drawing)	

*Revised Oct 2014*

## INTRODUCTION

### Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw for your Robinson R44.

### General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

**Table 1 – Helitowcart Customer Support**

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 <a href="mailto:info@helitowcart.com">info@helitowcart.com</a>

### Helicopter Effectivity

This installation instruction applies to the following ROBINSON Helicopters:

**Table 2 – Robinson Helicopter Effectivity**

A/C Model	Serial no.	Type Certificate Data Sheet
R44	0271 thru 9999	H11NM
R44 II	1140, 10001 and subsequent	H11NM

### Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

## INSTALLATION

### BearPaw Installation

#### Reference Documentation:

- [1] Robinson R44 - Maintenance Manual & Instruction for Continued Airworthiness. RTR460.
- [2] Annex A – BearPaw Assembly Drawing (112-0001-00)

#### Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);
- Remove aft skid wearshoe & re-install the attaching screws.

#### Step 2: BearPaw Preparation

- With IceBlade Option: Install ice blades (Qty:2) under BearPaw pad as per drawing (112-0001-00) Ref [2];
- With IceBlade Option: Insert washer (Washer P/N 263-0001-17) through threaded part of the ice blade and secure with nut (P/N 262-0001-17);
- With the Streamline version of the Bearpaw (P/N 112-0001-00-D), install filler block (P/N 314-0022-01) with two bolts (P/N 261-0004-17), four washers (P/N 263-0001-17) and two nuts (P/N 262-0001-17) as per drawing (112-0001-00-D) Ref [2];
- Position the BearPaw under skid at the aft intersection with the cross tube as per figure 1 with narrow edge pointing forward.

#### Step 3: BearPaw Set Up

- Insert washers (P/N 263-0001-17) through all four bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert bolts(P/N261-0002-17) & (261-0003-17) and washer (P/N 263-0001-17) through BearPaw pad as per drawing (112-0001-00) Ref [2]
- Insert filler blocks (P/N314-0012-01) & (P/N314-0014-01) at front of BearPaw& Insert filler blocks (P/N314-0015-01) at rear of BearPaw as per drawing (112-0001-00) Ref [2];
- The use of filler blocks mentioned above may be replaced or complemented by the use of washers (P/N 263-0001-17). Bolts (P/N261-0002-17) & (261-0003-17) may be replaced by longer or shorter AN4 bolts as required.
- Insert both U-shaped clips (P/N 314-0006-15) through bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert slotted clip supports (P/N 314-0007-15) through all four bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 - Installed BearPaw Model BP44

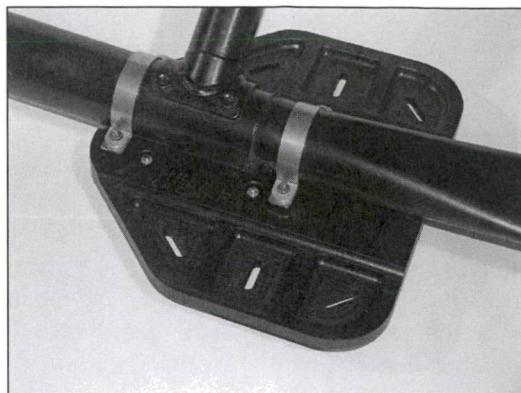
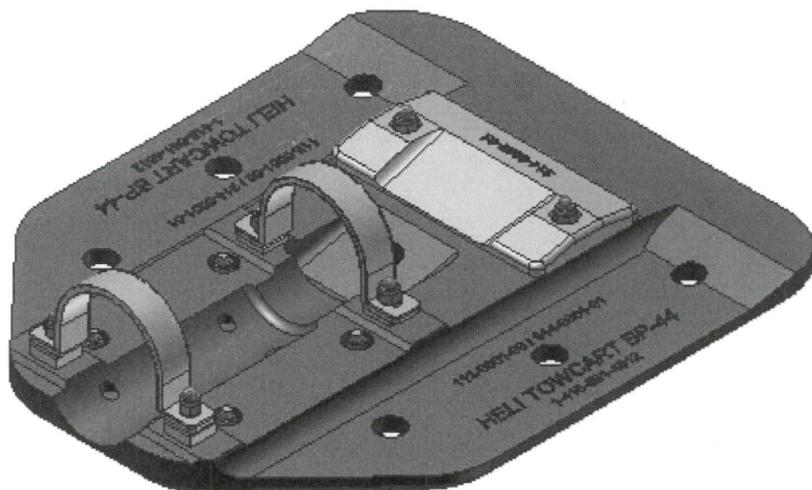


Figure 2 - BearPaw Model BP44 Streamline



### **BearPaw Removal**

#### **Step 1: Helicopter Preparation**

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

#### **Step 2: BearPaw Removal**

- Remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15), U-shaped clips (P/N 314-0006-15) and remove BearPaw pad (P/N 314-0001-01);
- Inspect skid tubes to confirm serviceability;
- Re-install aft wearshoe with screws as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required.

### **Weight & Balance**

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

**Table 3 – Weight & Balance Data**

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP44	5.9 Lb 2.7 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	758.1 in-lb 8.8 m-kg
Helitowcart BearPaw Model BP44 - Streamline	6.9 Lb 3.1 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	886.6 in-lb 10.1 m-kg

### Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

**Table 4 – Parts List**

Description	Qty	Part No.	Name (Drawing no.)
<b>BearPaw Model BP44</b>	<b>1</b>	<b>112-0001-00</b>	<b>112-0001-00-C / BearPaw Assembly 112-0001-00-D / BearPaw Streamline Assembly</b>
BearPaw pad	1	314-0001-01	314-0001-01-A / BearPaw – Pad (VNR088) 314-0001-01-B / BearPaw – Pad Streamline
U Shaped Clips	2	314-0006-15	BearPaw - U Shaped Clips (VNR087)
Slotted Clip Support	4	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks	1	314-0022-01	BearPaw – Filler block Rear
Filler blocks 1/4"	2	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Filler blocks 3/32"	2	314-0014-01	BearPaw – Filler block 3/32" (VNR103)
Filler blocks 1/8"	2	314-0015-01	BearPaw – Filler block 1/8" (VNR104)
Bolts	2	261-0002-17	Bolt- AN4-15
Bolts	2	261-0003-17	Bolt- AN4-16
Bolts	2	261-0004-17	Bolt- AN4-13 *Note: for Streamline Assembly
Nuts	4 *(+2)	262-0001-17	Nut- MS20-365-428 *Note: +2 for Streamline Assembly
Washers	8 *(+4)	263-0001-17	Washer – AN960-416 *Note: +4 for Streamline Assembly
Shrink	2	314-0016-00	BearPaw – Shrink Specifications & Installation
<b>IceBlade Option Model OIB</b>	<b>2</b>	<b>314-0005-15</b>	<b>VNR086 / IceBlade Assembly</b>
Nuts	4	262-0001-17	Nut- MS20-365-428
Washers	4	263-0001-17	Washer – AN960-416

## INSPECTION

### Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

### Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:

Table 5 – Tolerances for cracks & wear;  
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2) or  
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

### Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 300 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the R44 landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 300 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

### 300 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:  
 Table 5 – Tolerances for cracks & wear;  
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2); or  
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

**Table 5 – Tolerances for Cracks & Wear**

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,350	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Stiffeners</u> : NO cracks in stiffeners.  <u>Pockets</u> : Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,350	0,050	

E	N/A	N/A	No cracks allowed in zone E
F	0,350	0,050	For P/N 314-0001-01-B Only
G	0,75	0,050	For P/N 314-0001-01-B Only

### Overhaul Requirements

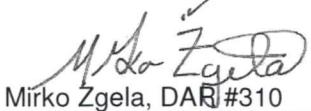
- Not applicable for the designated application of this device.

### REVISIONS & APPROVAL

#### Revisions

Date	Rev	Nature of Revisions
October 22, 2009	C	Introduction of new streamline BearPaw Pad configuration as alternate.
September 7, 2006	B	- Added filler blocks and heat shrink to product list. - Modified recommended bolt models (lengthened) - Revised inspection requirements from 100 hour to 300 hour intervals. - Identification of the IceBlade assembly as an optional feature.
June 12, 2006	A	Initial issue

#### Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	October 22, 2009
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	October 22, 2009

#### Annex A

See: BearPaw Assembly, drawing no. 112-0001-00-C  
BearPaw Streamline Assembly, drawing no. 112-0001-00-D

#### Annex B

See: BearPaw Pad Allowable Damage Drawing, drawing no. 314-0001-01-A (VNR088) page 2 of 2.  
BearPaw Streamline Allowable Damage Drawing, drawing no. 314-0001-01-B page 3 of 3)



314-0011-00-A Rev C  
**BearPaw Model BP44**  
**Installation Instructions - R44**

#### **Annex A**

BearPaw Assembly, Drawing no. 112-0001-00-C  
BearPaw Streamline Assembly, Drawing no. 112-0001-00-D

# 314-0011-00-A Rev C BearPaw Model BP44 Installation Instructions - R44

The diagram shows the exploded view of the BearPaw Assembly. The components and their part numbers and quantities are:

- 314-0016-05-A Qty. : 2
- 314-0015-01-A Qty. : 2
- 261-0002-17-A Qty. : 2
- 314-0005-15-A Qty. : 2
- 262-0001-17-A Qty. : 8
- 263-0001-17-A Qty. : 12
- 314-0007-15-B Qty. : 4
- 314-0006-15-B Qty. : 2
- 314-0014-01-A Qty. : 2
- 314-0012-01-A Qty. : 2
- 314-0001-01-A Qty. : 1
- 261-0003-17-A Qty. : 2

**Table R05: Modify Bolt Model & add Filler Block & Shrink**

Rev.	Description	Date	By
R05	Modify Bolt Model & add Filler Block & Shrink	06-09-06	G.L.
R04	Modify Bolt Model & add Filler Block	08-08-06	G.L.
R03	Issue for production	25-04-06	G.L.

**TOLERANCES**

1/8" ± 1/32" X.XX ± 0.032" XXX.XX ± 0.008"	ANGLE ± 1°
--	------------

**NOTE : Iceblade assembly can be omitted from installation (Optional)**

**Table R06: BearPaw Assembly**

Item / Ref.	Description	Date (yyyy-mm-dd)	Format	Sheet / Scale	Page /
Detail per Drawing by G. Lapointe	2008-04-25	B	N/A	1 de 1	
Verde par / Checked by VNR083	Date (yyyy-mm-dd)	Numero dessin / Drawing Number:	Rev. J	R05	
Approve par / Approved by: Rev. C	Date (yyyy-mm-dd)	Numero de pièce / Part Number:		112-0001-00-C	



**314-0011-00-A Rev C  
BearPaw Model BP44  
Installation Instructions - R44**

NOTE:  
 1. ICEBLADE ASSEMBLY CAN BE OMITTED FROM INSTALLATION (OPTIONAL)  
 2. FASTENERS LENGTH TO BE DETERMINED AT THE INSTALLATION

ISO SCALE 1 / 4

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SIZE
14	2	261-0004-17-A	BOLT AN4-13A	STEEL	1/4
13	2	314-0016-05-A	BEARPAW - SHRINK 1X5	RUBBER	
12	2	314-0015-01-A	BEARPAW - FILLER BLOCK 1/8	UHMW	1/8
11	2	314-0014-01-A	BEARPAW - FILLER BLOCK 3/32	UHMW	3/32
10	2	261-0002-17-A	BOLT AN4-15A	STEEL	1/4
9	10	262-0001-17-A	NUT MS20-365-428	STEEL	1/4
8	2	261-0003-17-A	BOLT AN4-16A	STEEL	1/4
7	4	314-0007-15-B	BEARPAW - SLOTTED CLIP SUPPORT	STEEL	
6	2	314-0006-15-B	BEARPAW - U SHAPED CLIP	STEEL	
5	2	314-0012-01-A	BEARPAW - FILLER BLOCK 1/4	UHMW	1/4
4	2	314-0005-15-A	BEARPAW - ICE BLADE ASSEMBLY	STEEL	
3	16	263-0001-17-A	WASHER AN960-416	STEEL	1/4
2	1	314-0022-01-A	BEARPAW - FILLER BLOCK REAR	UHMW	1/2
1	1	314-0001-01-B	BEARPAW - PAD	UHMW	1

UNITS UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE IN INCHES.  
 DRAWN: S. BERNIER 2009-10-22  
 DESIGNED: S. BERNIER 2009-10-22  
 Heli Tow Cart Inc.  
 860 Marie-Victorin, St-Nicolas, QC,  
 J5B 2L2, Canada  
 TEL: (416) 976-4332  
 FAX: (416) 976-2251  
 E-mail: info@helitowcart.com

LINEAR TOLERANCES:  ±  
 ANGULAR TOLERANCES:  ±  
 ALL MACHINE SURFACE   
 STRESS: \_\_\_\_\_  
 WEIGHT: \_\_\_\_\_  
 MATERIAL: \_\_\_\_\_  
 MECHANICAL SPEC.  
 SIZE: \_\_\_\_\_  
 HEAT TREAT: \_\_\_\_\_  
 FINISH: \_\_\_\_\_  
 IDENTIFYING METHOD: \_\_\_\_\_

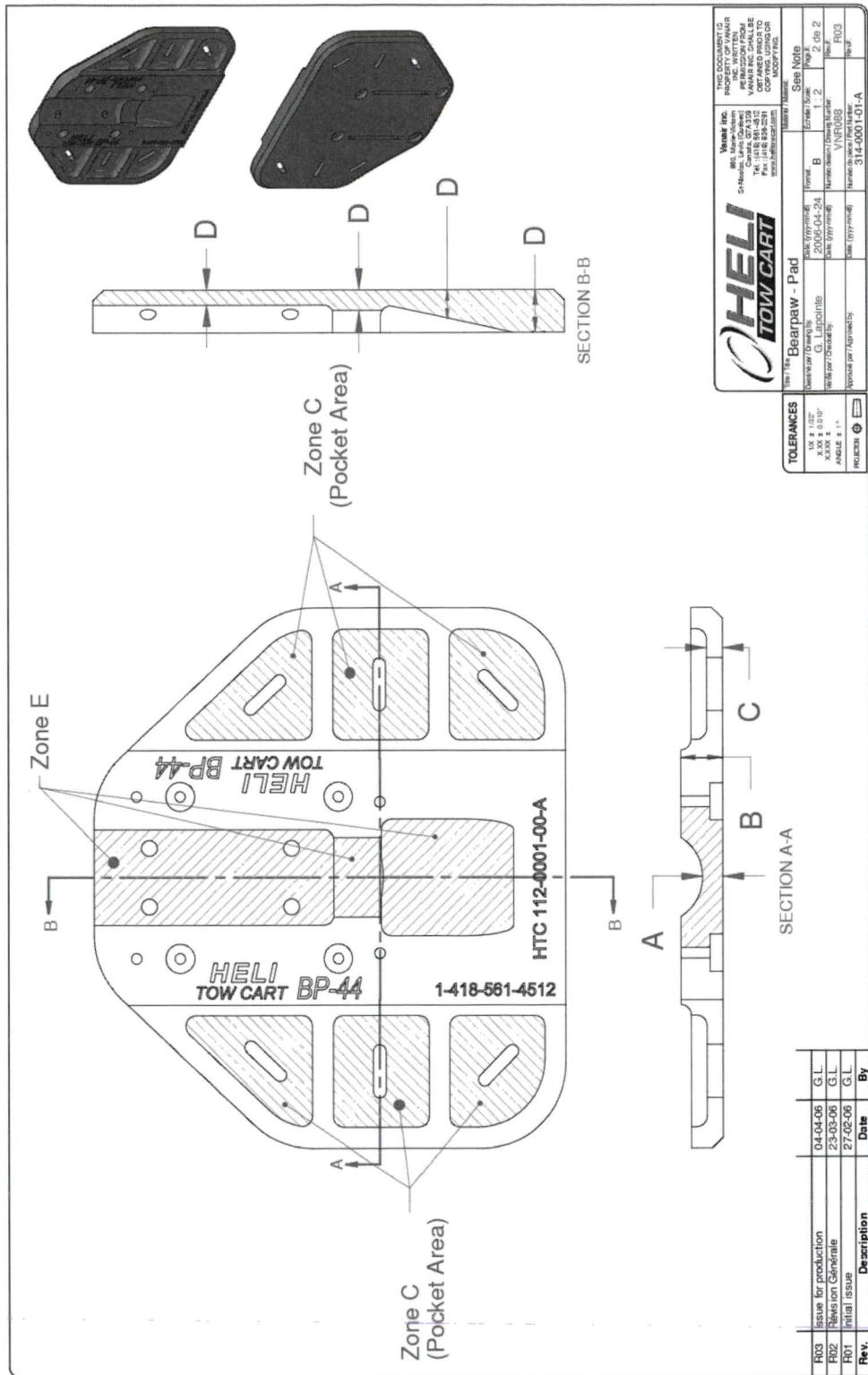
APPROVED: \_\_\_\_\_  
 APPROVED: \_\_\_\_\_  
 APPROVED: \_\_\_\_\_  
 APPROVED: \_\_\_\_\_

CASE CODE: B DRAWING No.: B 112-0001-00-D REV: D  
 DATE: 2009-10-22  
 SCALE: 1:4  
 CAD FILE: 112-0001-00.DWG  
 SHEET: 1 OF 1

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART INC. AND IN ACCEPTANCE OF THIS DRAWING THE USER AGREES NOT TO REPRODUCE IT OR ITS CONTENTS, NOR TO USE FOR THE PURPOSE OF MANUFACTURE OR ASSEMBLY ANY INFORMATION CONTAINED IN THIS DRAWING. NO PART OF THIS DRAWING MAY BE REPRODUCED OR OTHERWISE DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART INC.

### **Annex B**

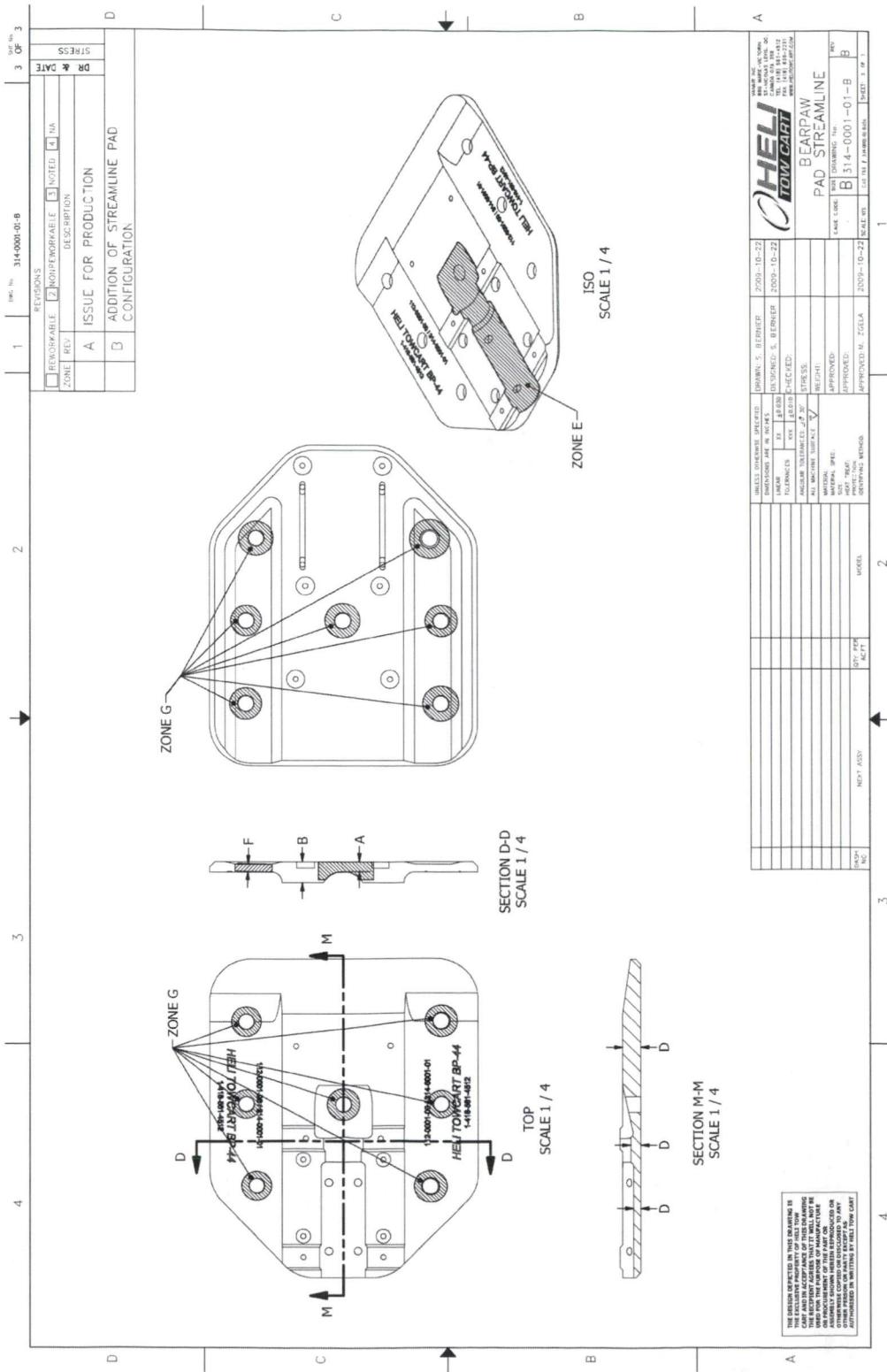
BearPaw Pad Allowable Damage Drawing, Drawing no. 314-0001-01-A (VNR088), Page 2 of 2  
BearPaw Streamline Allowable Damage Drawing, Drawing no. 314-0001-01-B, Page 3 of 3

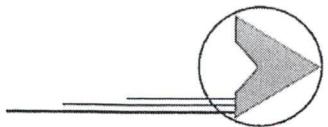




*By VANAIR*

**314-0011-00-A Rev C  
BearPaw Model BP44  
Installation Instructions - R44**

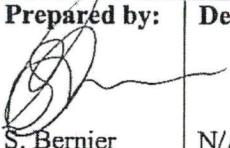
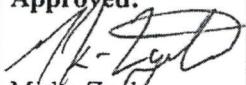


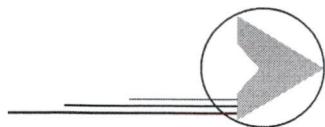


## Aviatech Technical Services Inc.

3005 rue Lindbergh  
Trois-Rivières, Québec  
G9A 5E1

## Engineering Order

<b>Title:</b> Engineering Order - BearPaw Streamline BP44				<b>EO#</b> ATS-EO-BP-R44-1000 Rev NC
<b>Prepared by:</b>  S. Bernier	<b>Design:</b> N/A	<b>Mech:</b> N/A	<b>Stress:</b> N/A	<b>Approved:</b>  Mirko Zgela (DAR #310)
<b>A/C Effectivity</b> R44 R44 II	<b>Registration:</b> N/A			<b>Date:</b> Apr 15, 2010
<b>Serial#:</b> 0271 thru 9999 1140, 10001 and subsequent				
<b>Reference Documents:</b>				
<ul style="list-style-type: none"> <li>[1] Robinson R44 - Maintenance Manual &amp; Instruction for Continued Airworthiness. RTR460</li> <li>[2] 314-0011-00-A Rev_D BearPaw Model BP44 – Installation Instructions - R44, dated April 15, 2010</li> <li>[3] AAC-STR-BP-R44-1000, Structural Substantiation – Helitowcart (Vanair Inc.) BearPaw Model BP44, dated July 4, 2006</li> </ul>				
<b>Applicable Drawings:</b>				
<ul style="list-style-type: none"> <li>[4] 112-0001-00-E BearPaw Streamline Assembly</li> </ul>				
<b>Background:</b>				
<p>The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter.</p>				
<b>Description of Change:</b>				
<p>The BearPaw Streamline Pad (P/N 314-0001001-B) is longer than the original design. An additional support is required to provide added support to the Pad in the unlikely event that a Pad would get stuck into the mud. Figures (1) shows the BearPaw Streamline assembly .</p>				



**Aviatech Technical Services Inc.**

3005 rue Lindbergh  
Trois-Rivières, Québec  
G9A 5E1

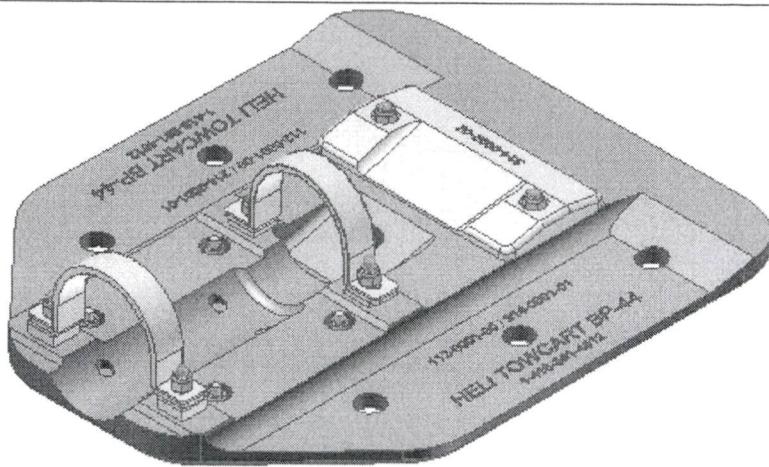


Figure 1 - BearPaw Streamline Assembly

**New configuration:**

As a preventive measure to reduce the bending moment and the load in the middle U clips during lift-off a U clip is added. Figure 2 shows the new assembly.

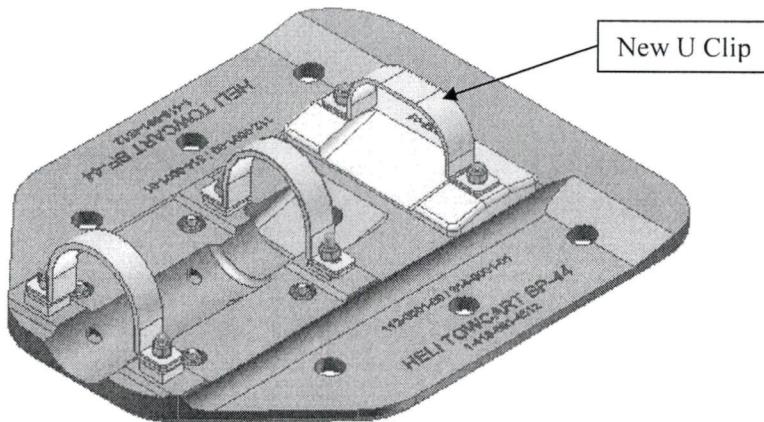
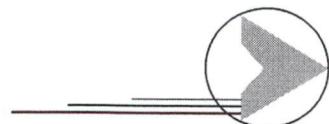


Figure 2 - BearPaw Streamline New Assembly

**Structural Analysis:**

No additional structural analysis is needed since the two front U clips have proven to take the load during the landing in the document # AAC-STR-BP-R44-1000, Structural Substantiation – Helitowcart (Vanair Inc.) BearPaw Model BP44, dated July 4, 2006.



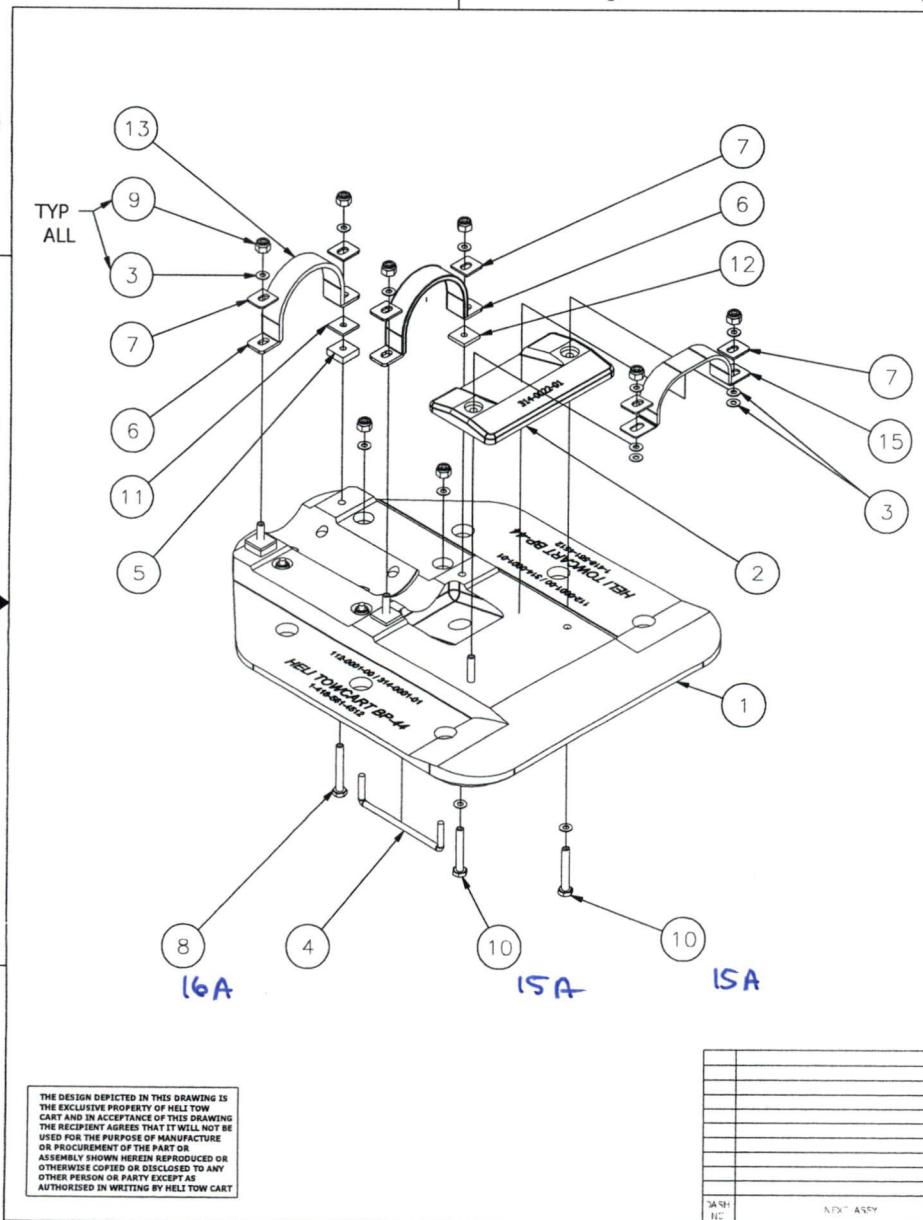
## ***Aviatech Technical Services Inc.***

3005 rue Lindbergh  
Trois-Rivières, Québec  
G9A 5E1

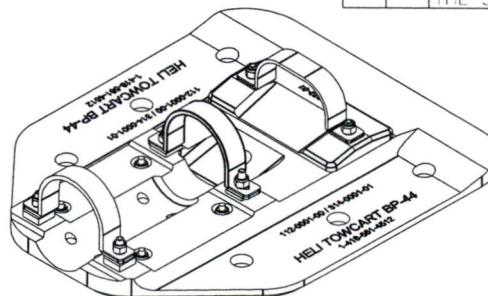
### **Installation Instructions:**

1

Install the BearPaw Streamline assembly as per document #314-0011-00, Rev D, BearPaw Model BP44 – Installation Instructions - R44



NOTE:  
 1. ICEBLADE ASSEMBLY CAN BE OMITTED FROM INSTALLATION (OPTIONAL)  
 2. FASTENERS LENGTH TO BE DETERMINED AT THE INSTALLATION



ISO  
SCALE 1 / 4

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SIZL
1	1	314 0023 15 A	BEARPAW U SHAPED CLIP REAR	STEEL	
2	3	314 0016 05 A	BEARPAW SHRINK 1X5	RUBBER	
3	2	314 0015 01 A	BEARPAW FILLER BLOCK 1/8	UHMW	1/8
4	2	314 0014 01 A	BEARPAW FILLER BLOCK 3/32	UHMW	3/32
5	4	261 0002 17 A	BOLT AN4 15A	STEEL	1/4
6	10	262 0001 17 A	NUT MS20 365 428	STIFI	1/4
7	2	261 0003 17 A	BOLTS AN4 16A	STEEL	1/4
8	6	314 0006 15 B	BEARPAW SLOTTED CLIP SUPPORT	STIFI	
9	2	314 0012 01 A	BEARPAW U SHAPED CLIP	STEEL	
10	2	314 0005 15 A	BEARPAW FILLER BLOCK 1/4	UHMW	1/4
11	20	263 0001 17 A	WASHER AN960 416	STEEL	1/4
12	1	314 0022 01 A	BEARPAW FILLER BLOCK REAR	UHMW	1/2
13	1	314 0001 01 A	BEARPAW PAD	UHMW	1

				UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.	DRAWN: S. BERNIER 10/04/2010
				DESIGNED: S. BERNIER 10/04/2010	ST. NORMS: FWD. DC. "HELICOPTER TOWING" "48" SET 4512 "48" SET 2291 "48" SET 2290
				CHECKED:	
				APPROVED:	
				PRINTED:	
				REVISIONS:	
				DATE CODE: SIZE DRAWING NO.:	
				B 112-0001-00-E	E
				COMMENTS:	
				112-0001-00-E.dwg	Sheet 1 of 1

**OHELI**  
**TOW CART**

B BEARPAW  
STREAMLINE ASSEMBLY

*N. Bernier*  
2010.04.24

4

3

3

-0001-00-

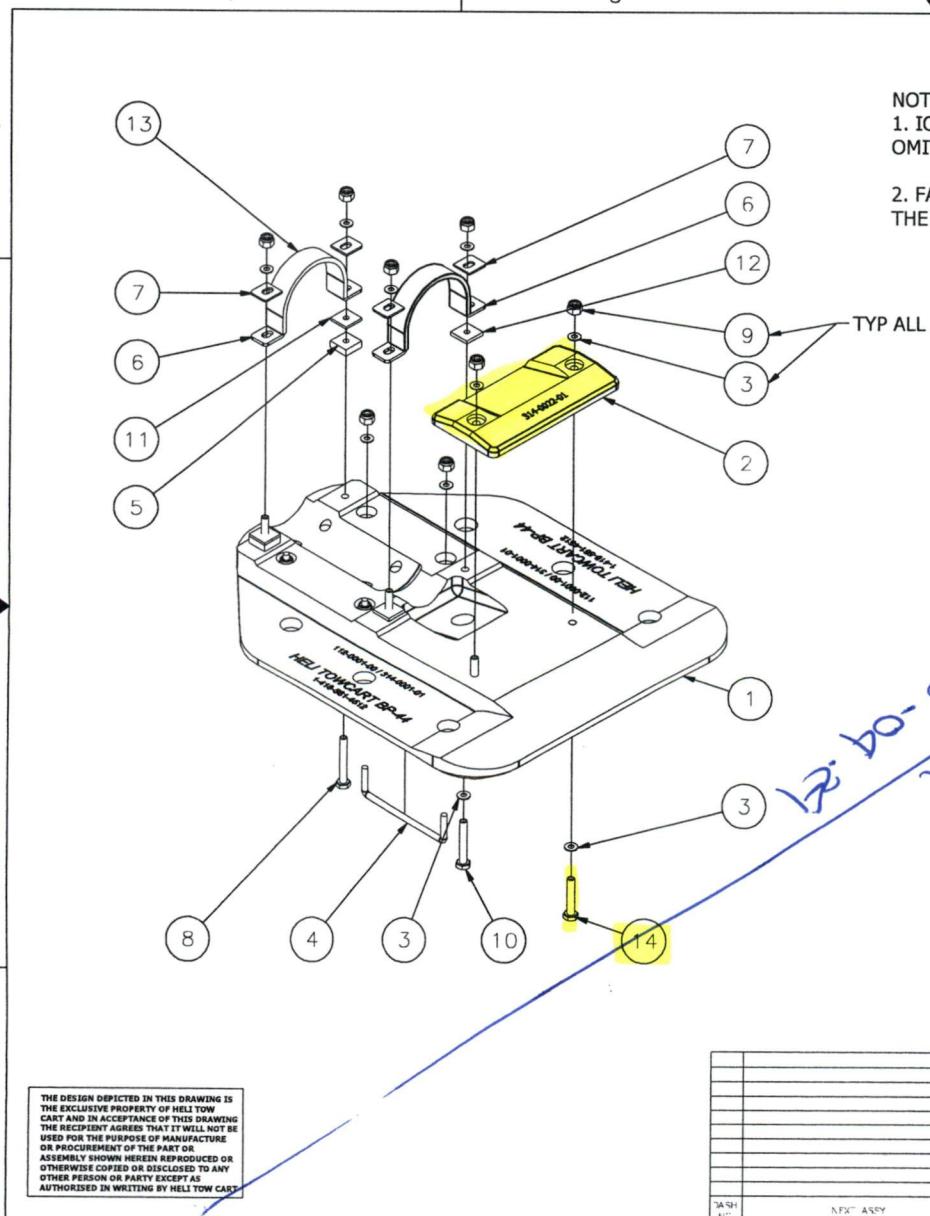
1 51 No. 1

D

C

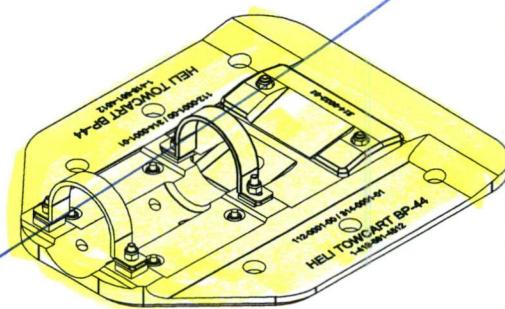
B

A



**NOTE:**

1. ICEBLADE ASSEMBLY CAN BE OMITTED FROM INSTALLATION (OPTIONAL)
2. FASTENERS LENGTH TO BE DETERMINED AT THE INSTALLATION



ISO  
SCALE 1 / 4

LINE	ITEM	QUANTITY	ITEM NUMBER	DESCRIPTION	UNIT	QTY
1	2	261	0004 17 A	BOLT AN4 13A	STEEL	/4
2	2	314	0016 05 A	BEARPAW SHRINK 1X5	RUBBER	
3	2	314	0015 01 A	BEARPAW FILLER BLOCK 1/8	UHMW	/8
4	2	314	0014 01 A	BEARPAW FILLER BLOCK 3/32	UHMW	3/32
5	2	261	0003 17 A	HOLT AN4 15A	STEEL	/4
6	10	262	0001 17 A	NUT MS20 365 4-28	STIFI	/4
7	2	261	0003 17 A	BOLT AN4 16A	STEEL	/4
8	4	314	0007 15 3	BEARPAW SLOTTED CLIP SUPPORT	STIFI	
9	2	314	0006 15 3	BEARPAW U SHAPED CLIP	STEEL	
10	2	314	0012 01 A	BEARPAW FILLER BLOCK 1/4	UHMW	/4
11	2	314	0005 15 A	BEARPAW ICE BLADE ASSEMBLY	STEEL	
12	16	263	0001 17 A	WASHER AN960 416	STEEL	/4
13	1	314	0022 01 A	BEARPAW FILLER BLOCK REAR	UHMW	/2
14	1	314	0001 01 3	BEARPAW PAD	UHMW	/
15	1	314	0001 01 3	BEARPAW PAD	UHMW	/

**THE DESIGN DEPICTED IN THIS DRAWING IS  
THE EXCLUSIVE PROPERTY OF HELI TOW  
PART AND IN ACCEPTANCE OF THIS DRAWING  
THE RECIPIENT AGREES THAT IT WILL NOT BE  
USED FOR THE PURPOSE OF MANUFACTURE  
OR PROCUREMENT OF THE PART OR  
ASSEMBLY SHOWN HEREIN REPRODUCED OR  
OTHERWISE COPIED OR DISCLOSED TO ANY  
OTHER PERSON OR PARTY EXCEPT AS  
AUTHORISED IN WRITING BY HELI TOW PART**

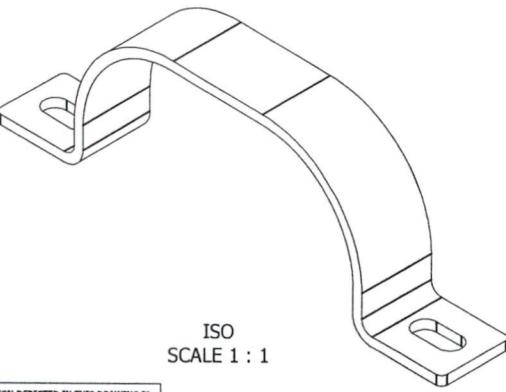
UNLESS OTHERWISE SPECIFIED		DRAWN: S. BERNIER		DESIGNER: S. BERNIER		MATERIAL: STEEL	
PRINTING: APT IN INCHES		2016-10-22		2019-10-22		SIZE: 1/8"	
INCHES	EX. 1/8" INCHES	EX. 1/8" INCHES	EX. 1/8" INCHES	EX. 1/8" INCHES	EX. 1/8" INCHES	EX. 1/8" INCHES	EX. 1/8" INCHES
ANGLE: 30°		CHECKED:				ELEVATION: 1/4"	
ANGLE: 30°		STRESS:				SECTION: 1/4"	
HEL-MAC SURFACE ✓		AFTIGHT:				MATERIAL: STEEL	
WATER:		AFTIGHT:				APPROV'D:	
INTERNAL SPEC:		AFTIGHT:				DATE CODE: 112	
SPL:		APPROV'D:				DRAWING NO.: 112-0001-00-D	
FLANGE:		APPROV'D:				P/N: D	
PROFIL: HEL-MAC		APPROV'D:				MODIF:	
PROFIL: HEL-MAC		APPROV'D:				MODIF:	

2020-01.06

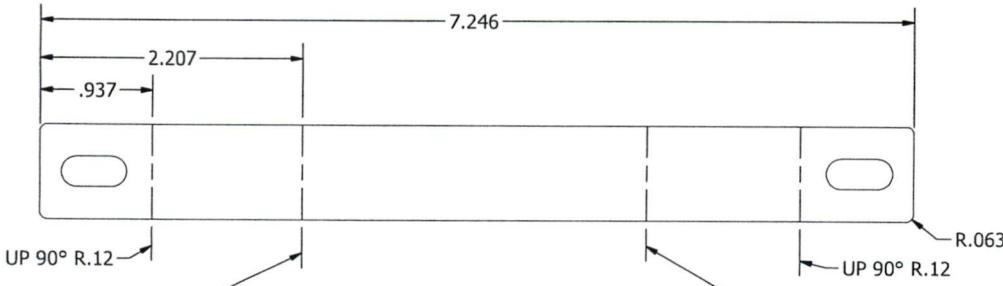
4	3	2	1
		↓	
D			D
C			C
B			B
A			A
1 OF 1			

**NOTES:**

1. INTERPRET DRAWING IN ACCORDANCE WITH ANSI Y14.5M 1994. DIMENSIONS AND TOLERANCING
2. REMOVE ALL BURRS AND SHARP EDGES 1/64" MAX
3. FILL CLIENT INSPECTION FORM



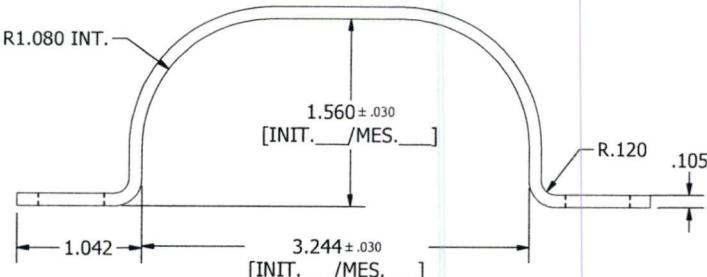
ISO  
SCALE 1 : 1



FLAT PATTERN  
SCALE 1 : 1



LEFT  
SCALE 1 : 1



FRONT  
SCALE 1 : 1

PART NO./REF.	ITEM QTY	DESCRIPTION	MATERIAL	SIZE
314-0023-15-A	1	BEARPAW U SHAPED CLIP REAR	STEEL	0.105
UNLESS OTHERWISE SPECIFIED PRINTING ART IN INCHES				
INCHES	MM	DESIGNED BY: S. BERNIER	15/04/2010	
EX-1	25.405	CHECKED BY:	15/04/2010	
WELD LINE: 314-0023-15-A-101				
ALL VISIBLE SURFACE ✓				
STRESS: ✓				
ALL VISIBLE SURFACE ✓				
WELD LINE: 314-0023-15-A-101				
APPROVED BY: ✓				
APPROVED DATE: 15/04/2010				
APPROVED BY: ZGF A				
APPROVED DATE: 15/04/2010				

PART NO./REF.	ITEM QTY	DESCRIPTION	MATERIAL	SIZE
314-0023-15-A	1	BEARPAW U SHAPED CLIP REAR	STEEL	0.105
UNLESS OTHERWISE SPECIFIED PRINTING ART IN INCHES				
INCHES	MM	DESIGNED BY: S. BERNIER	15/04/2010	
EX-1	25.405	CHECKED BY:	15/04/2010	
WELD LINE: 314-0023-15-A-101				
ALL VISIBLE SURFACE ✓				
STRESS: ✓				
ALL VISIBLE SURFACE ✓				
WELD LINE: 314-0023-15-A-101				
APPROVED BY: ✓				
APPROVED DATE: 15/04/2010				
APPROVED BY: ZGF A				
APPROVED DATE: 15/04/2010				

**REVISIONS**

REV A	REV B	REV C	REV D	REV E	REV F	REV G	REV H	REV I	REV J
DESCRIPTION									
A ISSUE FOR PRODUCTION									

**314-0023-15-A**

*D. Balon 2010.09.21*

Helitowcart**Guide d'assemblage des BearPaws**Liste de Distribution

<b>Objet</b>	<b>No</b>	<b>Rev</b>
*Assembly BP44 streamlined	*112-0001-00	*E DP 2010.04.24
Assembly BP44	VNR083	R05
	112-0001-00	C
Assembly BP350 with holes and cavities	112-0002-00	B
Assembly BP350 streamlined	112-0002-00-S	A
BearPaw Hardware components	314-0010-00	*F DB 2010.04.24
BearPaw Preparation & Packaging	314-0013-00	C
BearPaw BP44 / Heat Shrink Specs & Installation	314-0016-05	A
BearPaw BP350 / Heat Shrink Specs & Installation	314-0021-01	A

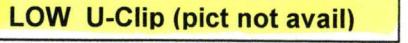
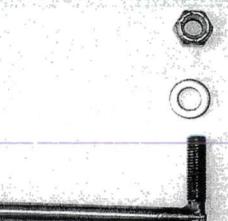
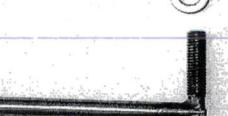
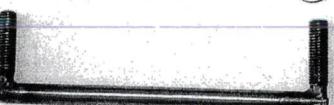
\*\*updated marked with \*\*

## BearPaw Hardware components

### BearPaw Hardware:

	BP44	Quantities per PAIR	BP350		
	HTC : 314-0006-15B	4	HTC : 314-0019-15A	6	
AN4-14A	HTC : 314-0007-15B	8	Same	12	
AN4-15A	HTC : 261-0002-17A	4	HTC : 261-0001-17A	12	
AN4-16A	HTC : 261-0003-17A	4			
MS20-365-428	HTC : 262-0001-17A	8	Same	12	
AN960-416	HTC : 263-0001-17A	16	Same	24	
	1/4"	HTC : 314-0012-01A	4	Same	12
	3/32"	HTC : 314-0014-01A	4		
	1/8"	HTC : 314-0015-01A	4		

### Rear Filler block & IceBlade Hardware:

AN4-15A		HTC : 261-0002-17A	4
MS20-365-428		HTC : 262-0001-17A	4
AN960-416		HTC : 263-0001-17A	16
		HTC : 314-0022-01A	2
		HTC : 314-0023-15A	2
MS20-365-428		HTC : 262-0001-17A	8
AN960-416		HTC : 263-0001-17A	8
		HTC : 263-0005-15A	4

Nature of modification : Added Low U-Clip to BP44, increases washers too. Changed 13A bolt for 15A bolt at Rear Filler block.

## BearPaw Hardware components

### BearPaw Hardware:

	BP44	BP350		
HTC : 314-0006-15B	4	HTC : 314-0019-15A	6	
HTC : 314-0007-15B	8	Same	12	
Not shown here		HTC : 261-0001-17A	12	
HTC : 261-0002-17A	4			
HTC : 261-0003-17A	4			
HTC : 262-0001-17A	8	Same	12	
HTC : 263-0001-17A	16	Same	24	
1/4"	HTC : 314-0012-01A	4	Same	12
3/32"	HTC : 314-0014-01A	4		
1/8"	HTC : 314-0015-01A	4		

### Rear Filler block & IceBlade Hardware:

AN4-13A	HTC : 261-0004-17A	4
MS20-365-428	HTC : 262-0001-17A	4
AN960-416	HTC : 263-0001-17A	8
	HTC : 314-0022-01A	2
	Rear filler block (image not to scale)	
MS20-365-428	HTC : 262-0001-17A	8
AN960-416	HTC : 263-0001-17A	8
	HTC : 263-0005-15A	4

*D. Baile*

Htc : 314 - 0023-15A (2)

Nature of modification : Modified bolt type to AN4-13A for filter block



# 314-0010-00-G

## BearPaw Hardware components

### BearPaw Hardware:

	BP44	BP350
HTC : 314-0006-15B	4	HTC : 314-0019-15A
HTC : 314-0007-15B	8	Same
HTC : 261-0002-17A	4	HTC : 261-0001-17A
HTC : 261-0003-17A	4	
HTC : 262-0001-17A	8	Same
HTC : 263-0001-17A	16	Same
1/4"	HTC : 314-0012-01A	4
3/32"	HTC : 314-0014-01A	4
1/8"	HTC : 314-0015-01A	4

### Rear Filler block & IceBlade Hardware:

AN4-13A		HTC : 261-0004-17A	4
MS20-365-428		HTC : 262-0001-17A	4
AN960-416		HTC : 263-0001-17A	8
		HTC : 314-0022-01A	2
		Rear filler block (image not to scale)	

MS20-365-428		HTC : 262-0001-17A	8	Same
AN960-416		HTC : 263-0001-17A	8	Same
		HTC : 263-0005-15A	4	Same

D. Barthe  
2010.01.06

Nature of modification : Modified bolt type to AN4-13A for filler block



BY VANAIR

DRR BP  
350

## 314-0010-00-G BearPaw Hardware components

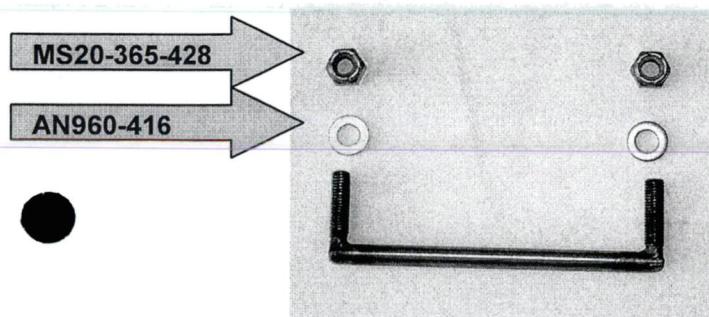
### BearPaw Hardware:

	BP44	BP350		
HTC : 314-0006-15B	4	HTC : 314-0019-15A	6	
HTC : 314-0007-15B	8	Same	12	
HTC : 261-0002-17A	4	HTC : 261-0001-17A	12	
HTC : 261-0003-17A	4			
HTC : 262-0001-17A	8	Same	12	
HTC : 263-0001-17A	16	Same	24	
1/4"	HTC : 314-0012-01A	4	Same	12
3/32"	HTC : 314-0014-01A	4		
1/8"	HTC : 314-0015-01A	4		

### Rear Filler block & IceBlade Hardware:

AN4-13A		HTC : 261-0004-17A	4	
MS20-365-428		HTC : 262-0001-17A	4	
AN960-416		HTC : 263-0001-17A	8	
		HTC : 314-0022-01A	2	Rear filler block (image not to scale)

DRR BP350  
versus BP44



HTC : 262-0001-17A	8	Same	16
HTC : 263-0001-17A	8	Same	16
HTC : 263-0005-15A	4	Same	8

*D. Belanger*  
2010.10.06

Nature of modification : Modified bolt type to AN4-13A for filler block

**TABLE OF CONTENTS:**

<b>INTRODUCTION</b>	<b>p.2</b>
Scope	p.2
General	p.2
Helicopter Effectivity	p.2
Installer Responsibilities	p.2
<b>INSTALLATION</b>	<b>p.3</b>
BearPaw Installation	p.3
BearPaw Removal	p.5
Weight & Balance	p.5
Parts List	p.6
<b>INSPECTION</b>	<b>p.7</b>
Life Limited Items	p.7
Pre-Flight	p.7
Periodic Inspection Schedule	p.7
300 Hour or Yearly Inspection Details	p.7
Overhaul Requirements	p.8
<b>REVISIONS &amp; APPROVAL</b>	<b>p.8</b>
Annex A (BearPaw Assembly Drawing)	
Annex B (BearPaw Pad Allowable Damage Drawing)	



314-0011-00 Rev D  
BearPaw Model BP44  
Installation Instructions - R44

## INTRODUCTION

### Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw for your Robinson R44.

### General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

**Table 1 – Helitowcart Customer Support**

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 <a href="mailto:info@helitowcart.com">info@helitowcart.com</a>

### Helicopter Effectivity

This installation instruction applies to the following ROBINSON Helicopters:

**Table 2 – Robinson Helicopter Effectivity**

A/C Model	Serial no.	Type Certificate Data Sheet
R44	0271 thru 9999	H11NM
R44 II	1140, 10001 and subsequent	H11NM

### Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

## INSTALLATION

### BearPaw Installation

#### Reference Documentation:

- [1] Robinson R44 - Maintenance Manual & Instruction for Continued Airworthiness. RTR460.
- [2] Annex A – BearPaw Assembly Drawings (112-0001-00-C & 112-0001-00-E)

#### Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);
- Remove aft skid wearshoe & re-install the attaching screws.

#### Step 2: BearPaw Preparation

- With IceBlade Option: Install ice blades (Qty:2) under BearPaw pad as per drawing (112-0001-00) Ref [2];
- With IceBlade Option: Insert washer (Washer P/N 263-0001-17) through threaded part of the ice blade and secure with nut (P/N 262-0001-17);
- Position the BearPaw under skid at the aft intersection with the cross tube as per figure 1 with narrow edge pointing forward.

#### Step 3: BearPaw Set Up

- If Streamline model, then apply step 3.1 here. (See step 3.1 described below)
- Insert washers (P/N 263-0001-17) through all four front bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert bolts(P/N261-0002-17) & (261-0003-17) and washer (P/N 263-0001-17) through BearPaw pad as per drawing (112-0001-00) Ref [2]
- Insert small filler blocks (P/N314-0012-01) & (P/N314-0014-01) at front of BearPaw & Insert filler blocks (P/N314-0015-01) at center of BearPaw as per drawing (112-0001-00) Ref [2];
- The use of filler blocks mentioned above may be increased, decreased or complemented by the use of washers (P/N 263-0001-17). Bolts (P/N261-0002-17) & (261-0003-17) may be replaced by longer or shorter AN4 bolts as required.
- Insert both U-shaped clips (P/N 314-0006-15) through bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert slotted clip supports (P/N 314-0007-15) through all four bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb.

#### Step 3.1: With the Streamline Version of the Bearpaw (P/N 112-0001-00-E)

- Insert washers (P/N 263-0001-17) through bolts (P/N261-0002-17)
- Insert bolts (P/N261-0002-17) and washer (P/N 263-0001-17) through the rear BearPaw pad as per drawing (112-0001-00-E) Ref [2]
- Insert rear filler block (P/N 314-0022-01) at the rear of BearPaw as per drawing (112-0001-00-E) Ref [2];
- Insert two washers (P/N 263-0001-17) per bolts (P/N261-0002-17) (four washers total)
- Insert Low U-shaped clip (P/N 314-0023-15) through bolts: (P/N261-0002-17) as per drawing (112-0001-00-E) Ref [2];
- Insert slotted clip supports (P/N 314-0007-15) through bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Bolts (P/N261-0002-17) may be replaced by longer or shorter AN4 bolts as required. Max. torque on nuts 60 in.-lb.

Page 3 of 14

Step 4: Final Step

- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 - Installed BearPaw Model BP44 (112-0001-00-C)

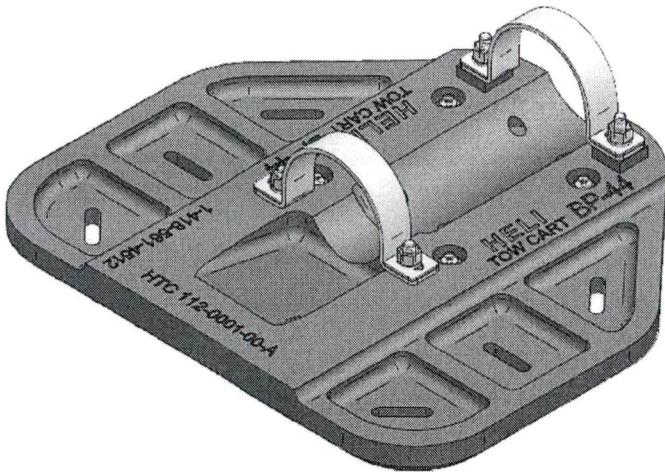
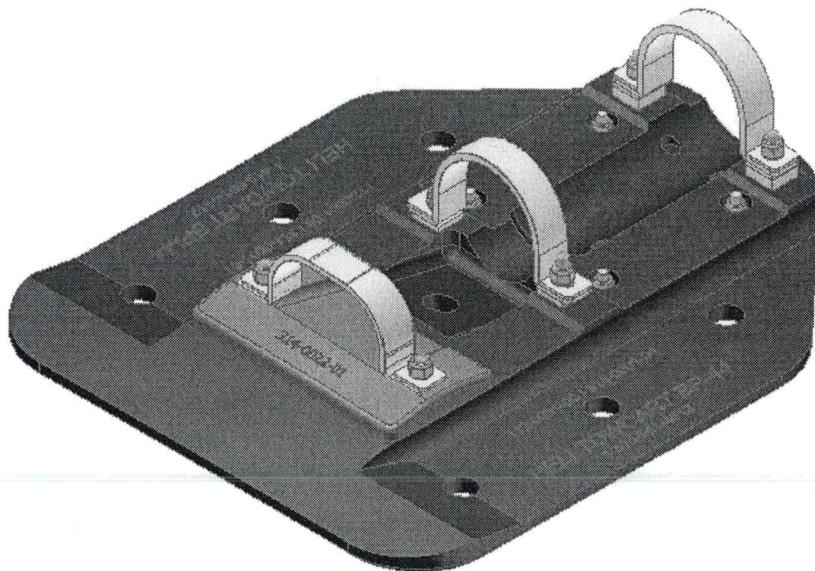


Figure 2 - BearPaw Model BP44 Streamline (112-0001-00-E)



### **BearPaw Removal**

#### **Step 1: Helicopter Preparation**

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 1/2" (38mm);

#### **Step 2: BearPaw Removal**

- Remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15) and U-shaped clips (P/N 314-0006-15);
- With the Streamline Version of the Bearpaw (P/N 112-0001-00-E) remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15) and rear U-shaped clips (P/N 314-0023-15);
- Remove BearPaw pad (P/N 314-0001-01);
- Inspect skid tubes to confirm serviceability;
- Re-install aft wearshoe with screws as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required.

### **Weight & Balance**

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

**Table 3 – Weight & Balance Data**

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP44	5.9 Lb 2.7 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	758.1 in-lb 8.8 m-kg
Helitowcart BearPaw Model BP44 - Streamline	7.0 Lb 3.2 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	889.5 in-lb 10.4 m-kg



314-0011-00 Rev D  
**BearPaw Model BP44**  
**Installation Instructions - R44**

**Parts Lists**

The Helitowcart BearPaw detailed parts list is as follow:

**Table 4 – Parts List**

Description	Qty	Part No.	Name (Drawing no.)
<b>BearPaw Model BP44</b>	<b>1</b>	<b>112-0001-00</b>	<b>112-0001-00-C / BearPaw Assembly 112-0001-00-E / BearPaw Streamline Assembly</b>
BearPaw pad	1	314-0001-01	314-0001-01-A / BearPaw – Pad (VNR088) 314-0001-01-B / BearPaw – Pad Streamline
Low U Shaped Clips	1	314-0023-15	BearPaw - Low U Shaped Clips
U Shaped Clips	2	314-0006-15	BearPaw - U Shaped Clips (VNR087)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks <b>REAR</b>	1	314-0022-01	BearPaw – Filler block Rear
Filler blocks 1/4"	2	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Filler blocks 3/32"	2	314-0014-01	BearPaw – Filler block 3/32" (VNR103)
Filler blocks 1/8"	2	314-0015-01	BearPaw – Filler block 1/8" (VNR104)
Bolts	2 *(+2)	261-0002-17	Bolt- AN4-15 *Note: for Streamline Assembly
Bolts	2	261-0003-17	Bolt- AN4-16
Nuts	4 *(+2)	262-0001-17	Nut- MS20-365-428 *Note: +2 for Streamline Assembly
Washers	8 *(+8)	263-0001-17	Washer – AN960-416 *Note: +8 for Streamline Assembly
Shrink	<b>3 X</b>	314-0016-00	BearPaw – Shrink Specifications & Installation
<b>IceBlade Option Model OIB</b>	<b>2</b>	<b>314-0005-15</b>	<b>VNR086 / IceBlade Assembly</b>
Nuts	4	262-0001-17	Nut- MS20-365-428
Washers	4	263-0001-17	Washer – AN960-416

## INSPECTION

### Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

### Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:  
Table 5 – Tolerances for cracks & wear;  
Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2) or  
Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

### Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 300 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the R44 landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 300 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

### 300 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:  
Table 5 – Tolerances for cracks & wear;  
Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2); or  
Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

Table 5 – Tolerances for Cracks & Wear

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,350	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Stiffeners:</u> NO cracks in stiffeners. <u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,350	0,050	

? Rear filler block ?  
Ne devient-il pas le  
dans cette boîte ?

E	N/A	N/A	No cracks allowed in zone E
F	0,350	0,050	For P/N 314-0001-01-B Only
G	0,75	0,050	For P/N 314-0001-01-B Only

### Overhaul Requirements

- Not applicable for the designated application of this device.

### REVISIONS & APPROVAL

#### Revisions

Date	Rev	Nature of Revisions
April 15, 2010	D	Addition of a rear U shaped clip in the Streamline BearPaw Pad configuration.
October 22, 2009	C	Introduction of new streamline BearPaw Pad configuration as alternate.
September 7, 2006	B	- Added filler blocks and heat shrink to product list. - Modified recommended bolt models (lengthened) - Revised inspection requirements from 100 hour to 300 hour intervals. - Identification of the IceBlade assembly as an optional feature.
June 12, 2006	A	Initial issue

#### Approval

##### Internal Approval :

Helitowcart inc.		April 15, 2010
Lucien Barbeau, President		

##### External Approval :

Transport Canada		April 15, 2010
Mirko Zgela, DAR #310		

#### Annex A

See: BearPaw Assembly, drawing no. 112-0001-00-C  
 BearPaw Streamline Assembly, drawing no. 112-0001-00-E

#### Annex B

See: BearPaw Pad Allowable Damage Drawing, drawing no. 314-0001-01-A (VNR088) page 2 of 2.  
 BearPaw Streamline Allowable Damage Drawing, drawing no. 314-0001-01-B page 3 of 3)

? filer block Rear?

Page 8 of 14



314-0011-00 Rev D  
BearPaw Model BP44  
Installation Instructions - R44

#### Annex A

BearPaw Assembly, Drawing no. 112-0001-00-C  
BearPaw Streamline Assembly, Drawing no. 112-0001-00-E

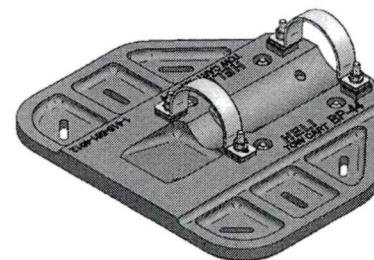
Page 9 of 14

Tel: 1-418-561-4512, Fax: 1-418-836-2291, 860 Marie-Victorin, Saint-Nicolas, Levis, Quebec, Canada G7A 3S9.  
[www.helitowcart.com](http://www.helitowcart.com) info@helitowcart.com

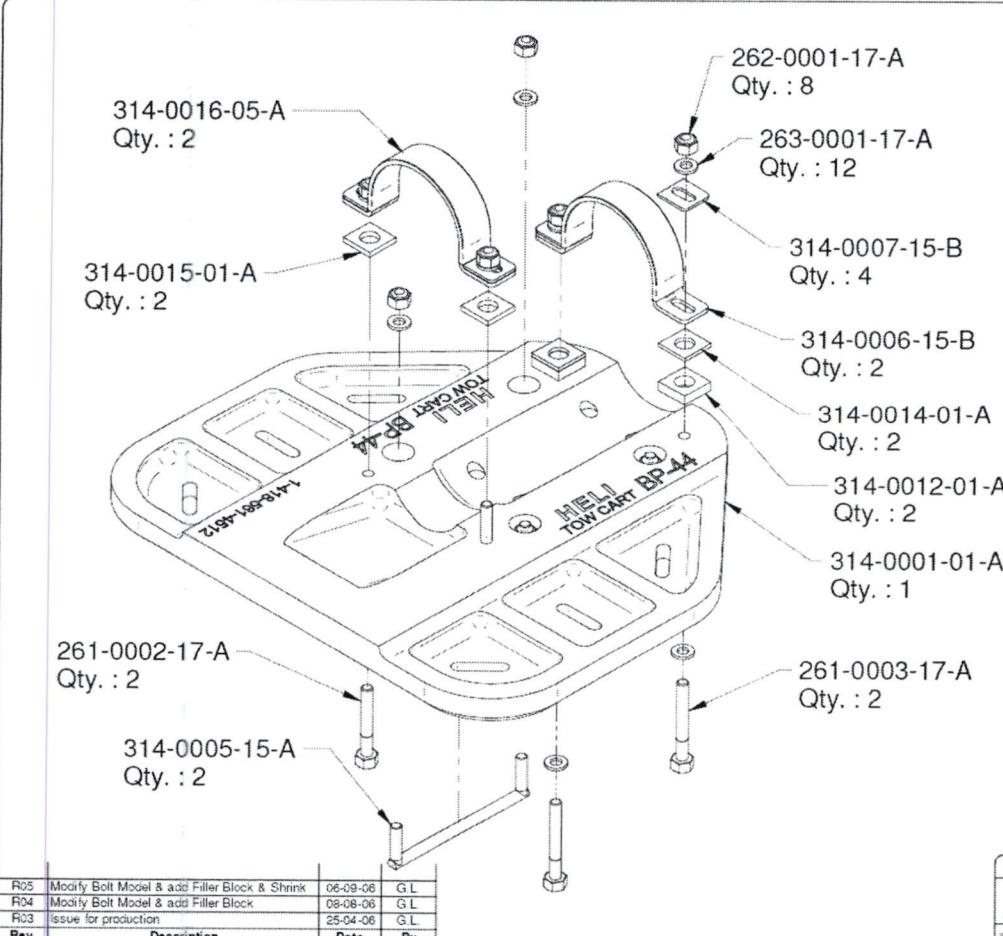


## 314-0011-00 Rev D BearPaw Model BP44 Installation Instructions - R44

N°	Qty	Description	Part #
1'	1	Bearpaw - Pad	314-0001-01-A
2'	2	Bearpaw - Iceblade assembly	314-0005-15-A
3'	2	Bearpaw - U Shaped clip	314-0006-15-B
4'	4	Bearpaw - Slotted clip support	314-0007-15-B
5'	8	Nut MS20-365-428	262-0001-17-A
6'	12	Washer AN960-416	263-0001-17-A
7'	2	Bolt AN-15A	261-0002-17-A
8'	2	Bearpaw - Filler Block 1/4"	314-0012-01-A
9'	2	Bolt AN-16A	261-0003-17-A
10'	2	Bearpaw - Shrink 1x5"	314-0016-05-A
11'	2	Bearpaw - Filler Block 1/8"	314-0015-01-A
12'	2	Bearpaw - Filler Block 3/32"	314-0014-01-A



NOTE : Iceblade assembly can be omitted from installation  
(Optional)



Rev.	Description	Date	By
R05	Modify Bolt Model & add Filler Block & Shrink	06-09-06	G.L
R04	Modify Bolt Model & add Filler Block	08-08-06	G.L
R03	Issue for production	25-04-06	G.L

TOLERANCES		Bearpaw Assembly		Master Model	
X, Y, Z ± 0.02	X, Y, Z ± 0.010	2006-04-25	2006-04-25	Series 500	NA
X, Y, Z ± 0.008	X, Y, Z ± 0.005	2006-04-25	2006-04-25	Series 500	NA
ANGLE ± 1°	ANGLE ± 0.5°	2006-04-25	2006-04-25	Series 500	NA
		Signature : G. Lapointe	Signature : G. Lapointe	Signature : VNR083	Signature : R05
		Date : 2006-04-25	Date : 2006-04-25	Date : 2006-04-25	Date : 2006-04-25
		Number of page : 1			
		Signature : G. Lapointe			
		Date : 2006-04-25	Date : 2006-04-25	Date : 2006-04-25	Date : 2006-04-25
		Number of page : 1			

**HELI**  
**TOW CART** BY VANAIR

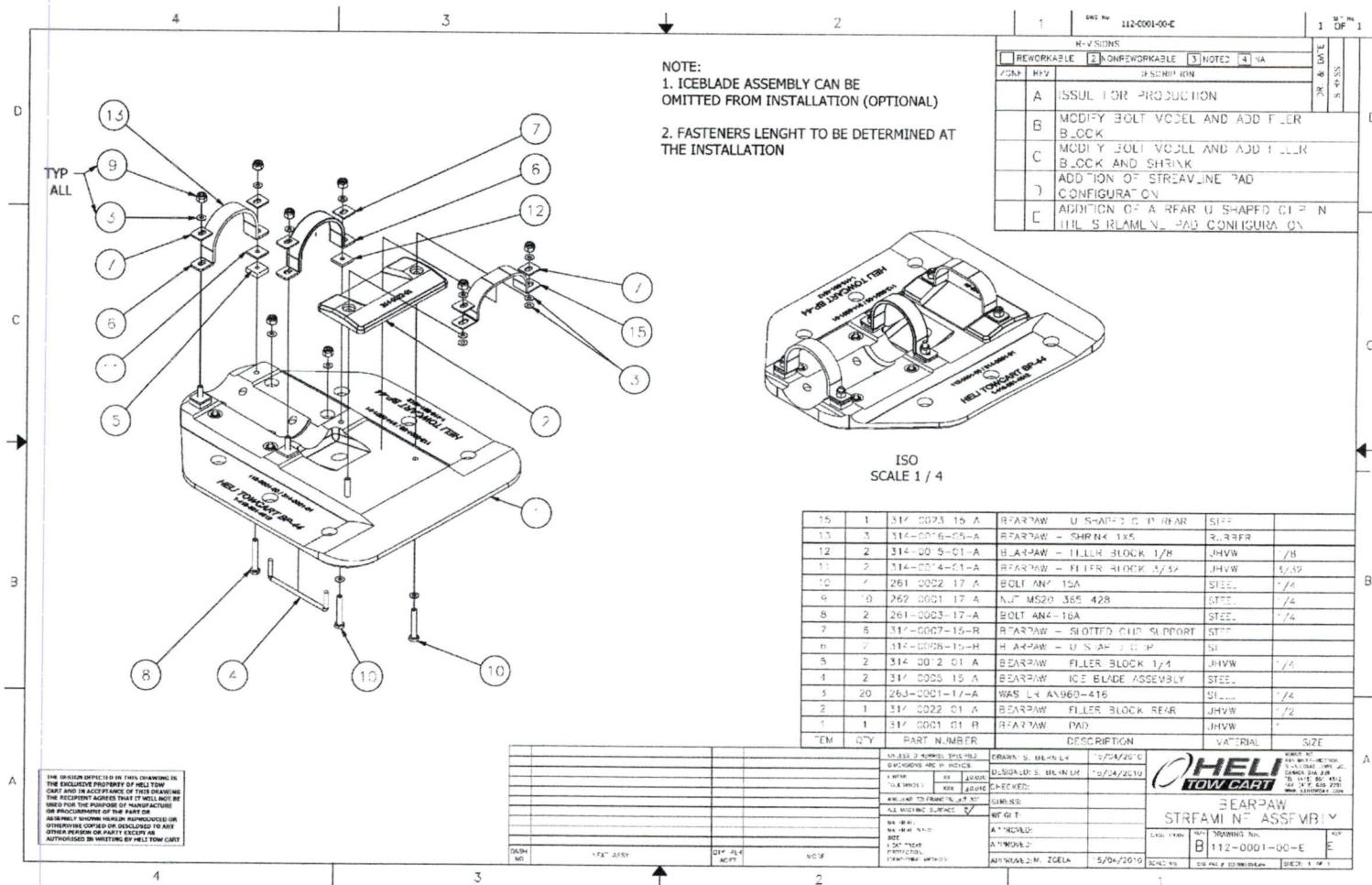
---

**314-0011-00 Rev D**

**BearPaw Model BP44**

**Installation Instructions - R44**

BeaPPaw Model BP44 Instructions - R44

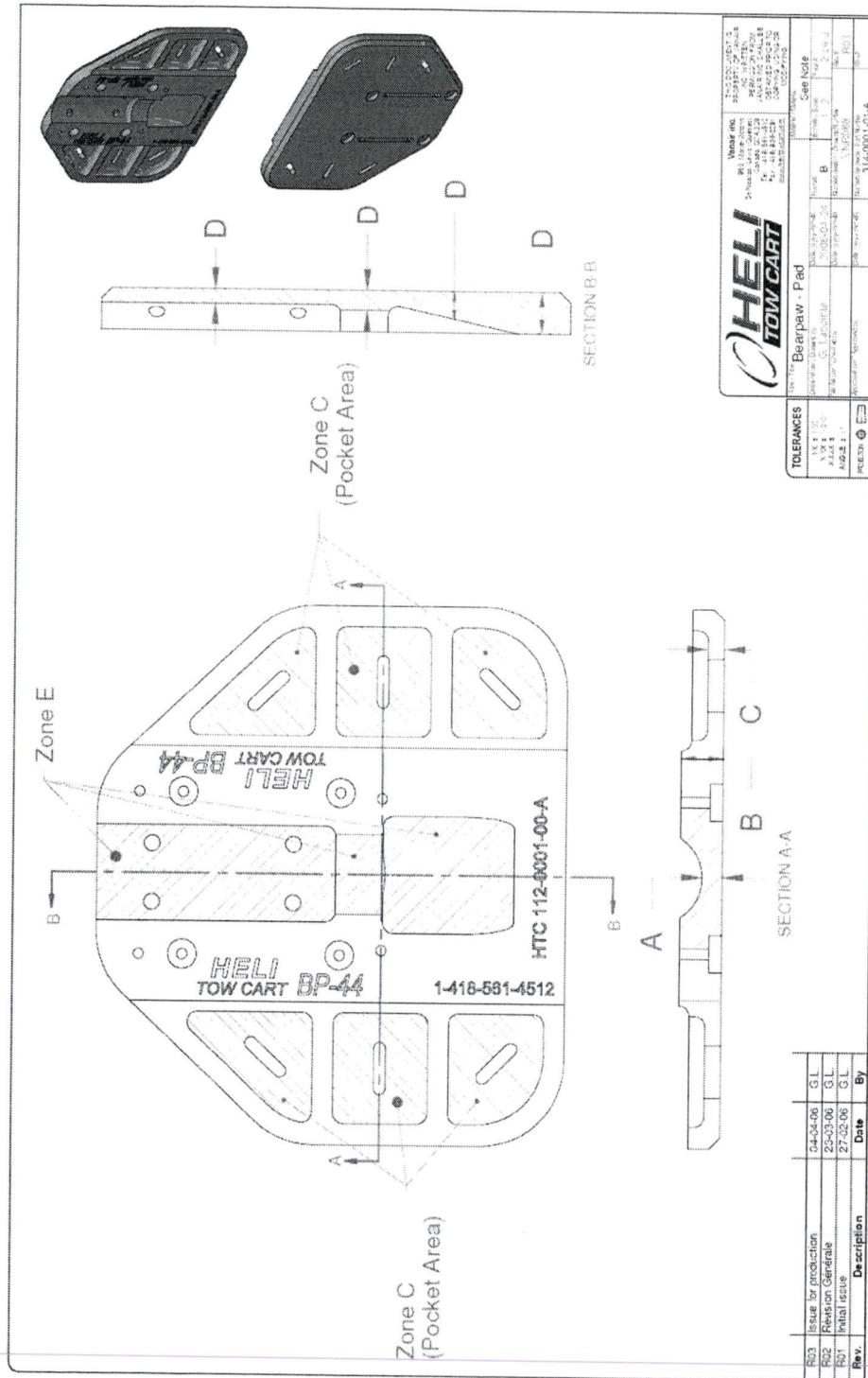




314-0011-00 Rev D  
BearPaw Model BP44  
Installation Instructions - R44

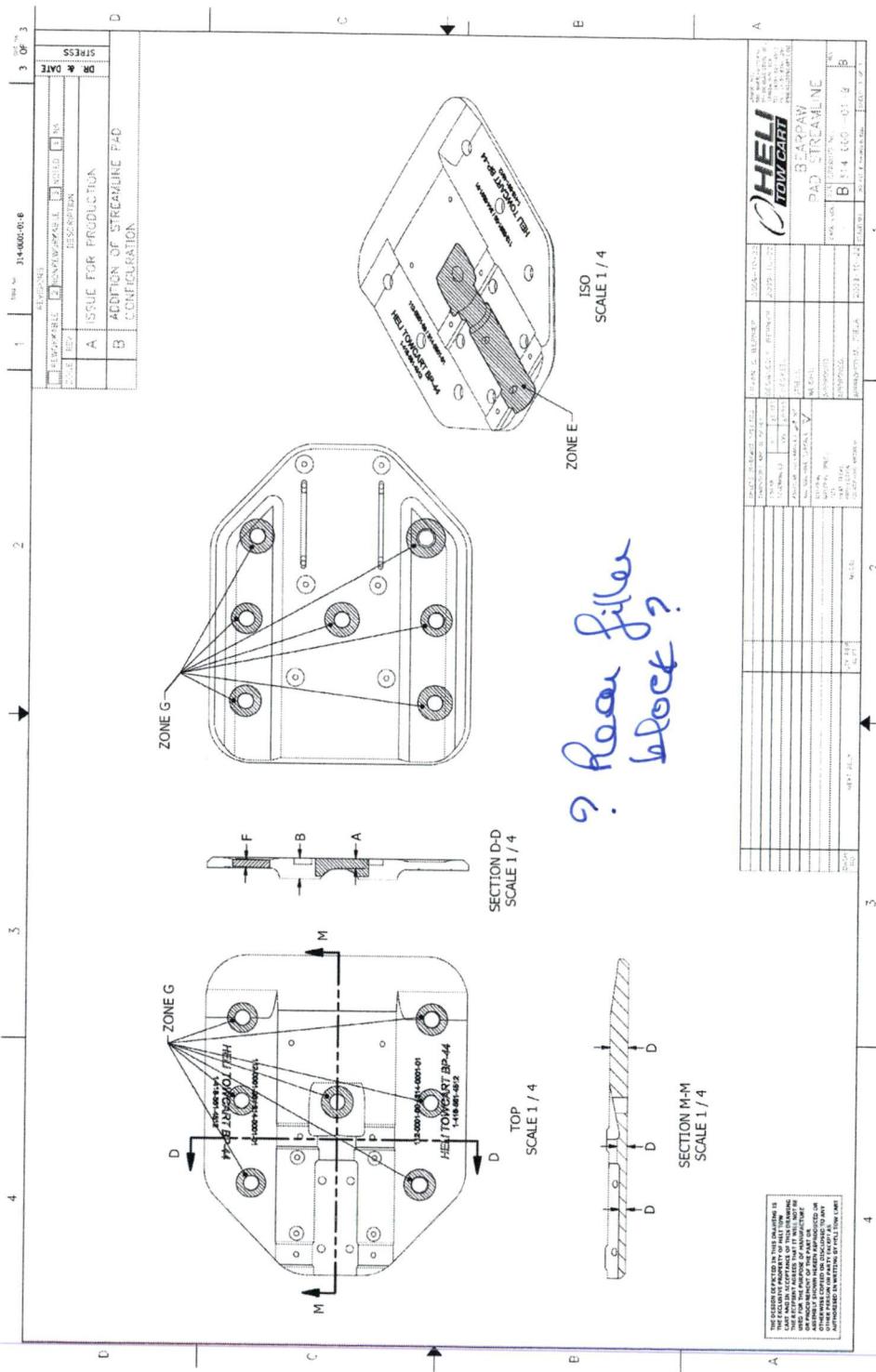
#### Annex B

BearPaw Pad Allowable Damage Drawing, Drawing no. 314-0001-01-A (VNR088), Page 2 of 2  
BearPaw Streamline Allowable Damage Drawing, Drawing no. 314-0001-01-B, Page 3 of 3





314-0011-00 Rev D  
BearPaw Model BP44  
Installation Instructions - R44



Ecot est une dessin de Coli inof et STS-STC  
est de moins de 1 mm zone laisse tel quel. NB

4

3

1

1 M.G. V. 314-0023-15

A 7EUD-47

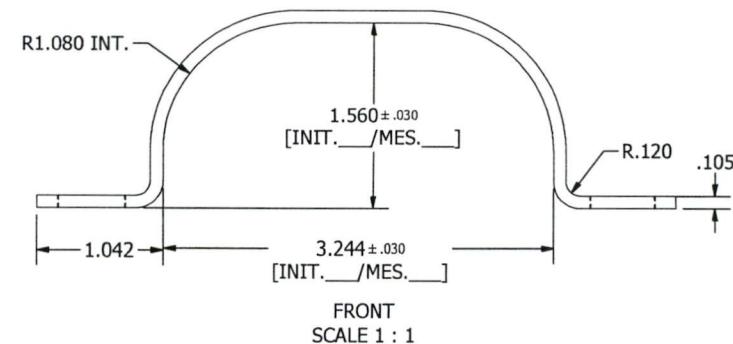
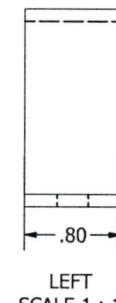
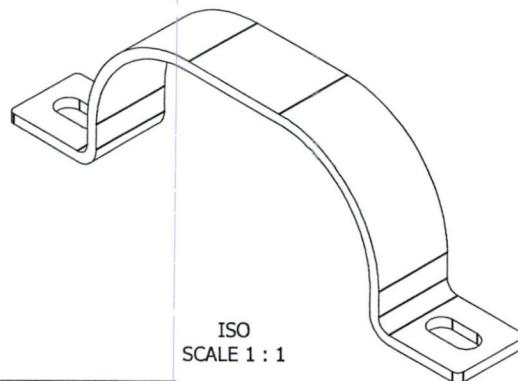
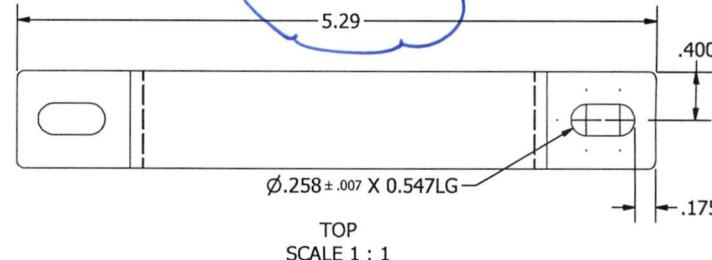
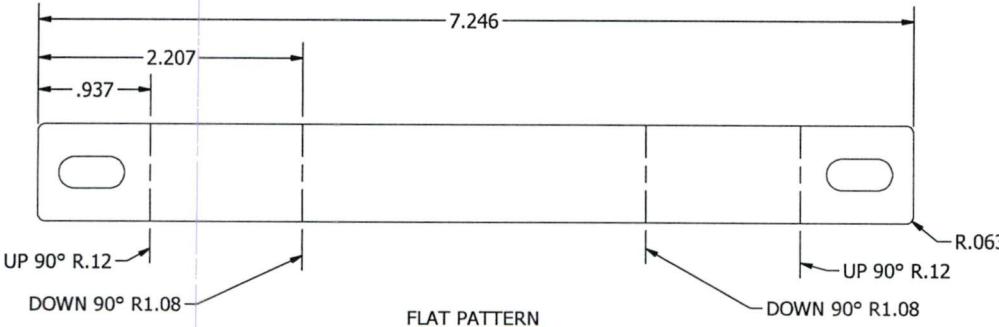
SIN  
OF

## NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH ANSI Y14.5M 1994. DIMENSIONS AND TOLERANCING
2. REMOVE ALL BURRS AND SHARP EDGES 1/64" MAX
3. FILL CLIENT INSPECTION FORM

$$l_{\text{min}} \approx 0.965 \text{ mm} = 0.038$$

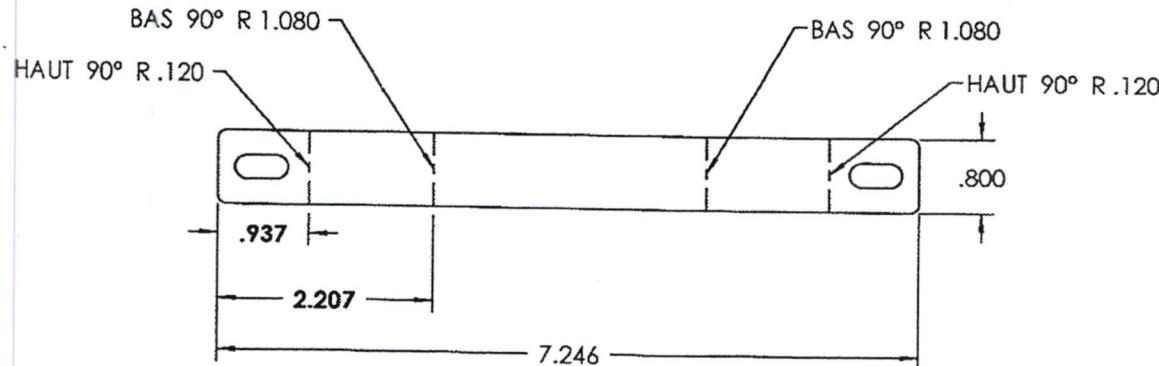
{ 5.328 }



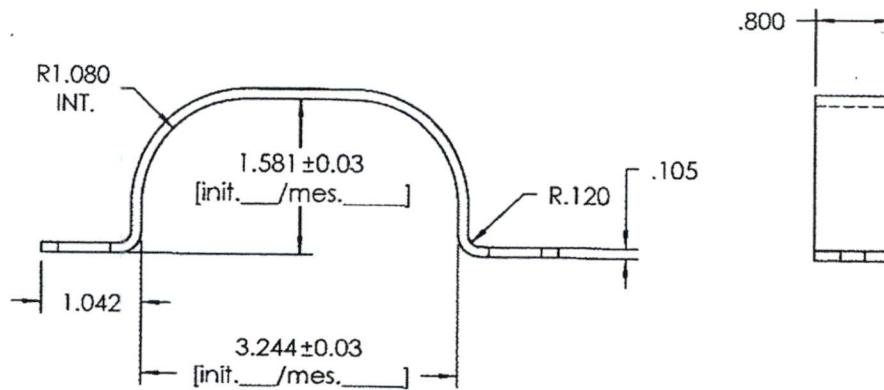
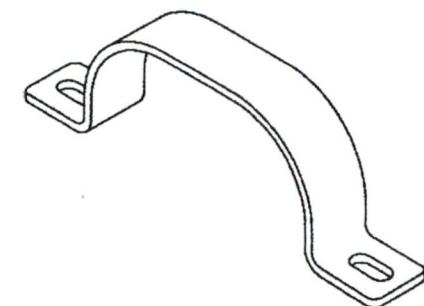
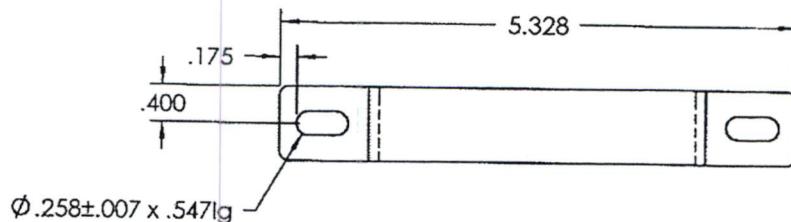
THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORISED IN WRITING BY HELI TOW CART

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SIZE
			UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES	DRAWN: S. BERNIER DESIGNED: S. TERNIER	15/04/2010 15/04/2010
UN-AS	X4	10-20			
UN-AS	X3	10-20			
			CHECKED:		
			ANCHOR TOLERANCE: $\pm .35^\circ$	STRESS:	
			A-1 MACHINING SURFACE: <input checked="" type="checkbox"/>	WEIGHT:	
				APPROVED:	
				APPROVED:	
				CAGE CODE: 867 DRAWING NO.: 314-0023-15-A	BLW
IMSH- AC	NEXT ASSY	GYL HLR ACT-I	V-NEL	A-1 (CVLUM: M. ZOLLA) PROTECTION: DUST PROOF C. METHOD:	15/04/2010 SCALPENTS DATE: 15/04/2010 15:44:27 TFT: 1 OF 1

NO.	MATÉRIEL	ÉP. SEUR	QTE / TOT.
1	SS 304 2B	0.105	10



\*\*Arrondir toute les arêtes au rayon 1/64" tout le tour et remplir la feuille d'inspection du client\*\*



 <b>CÔTÉ</b> <b>I N O X</b>	TOLÉRANCE (SI NON SPÉCIFIÉES)  X.X = ±0.100" X.XX = ±0.010" X.XXX = ±0.005" FRACTION = ±1/32" ANGLE = ±1°	CE DESSIN EST LA PROPRIÉTÉ DE CÔTÉ INOX TOUS DROITS RÉSERVÉS  THIS DRAWING IS THE PROPERTY OF CÔTÉ INOX ALL RIGHTS RESERVED	RESPONSABLE: S.C.	CLIENT: <b>HELI TOW CART</b>	TYPE DE DÉCOUPE: <b>LASER</b>
			DESSINÉ PAR: S.P.	PROJET: 10-0552-01	DESSIN NO: <b>314-0023-15A</b>
			VÉRIFIÉ PAR:	NOM PIÈCE / ASSEMBLAGE: <b>LOW U SHAPED CLIP</b>	REV: 1 ECHELLE: 1:2 DATE: 2010-02-23 Page 1 de 2

✓  
2010.04.01

FAX TRANSMISSION

Date: 2010. 03. 30

Pages: 19

To: MIRKO ZGELA Fax: 819. 377. 7928

From: NATHALIE BARBEAU

Object: ECO # 6 ADD 3<sup>RD</sup> U-CIP TO BP44 REAR

MIRKO,

voici les changements identifiés pour  
l'ajout de cet item.

ON VEUT LE FAIRE DÈS QUE POSSIBLE:

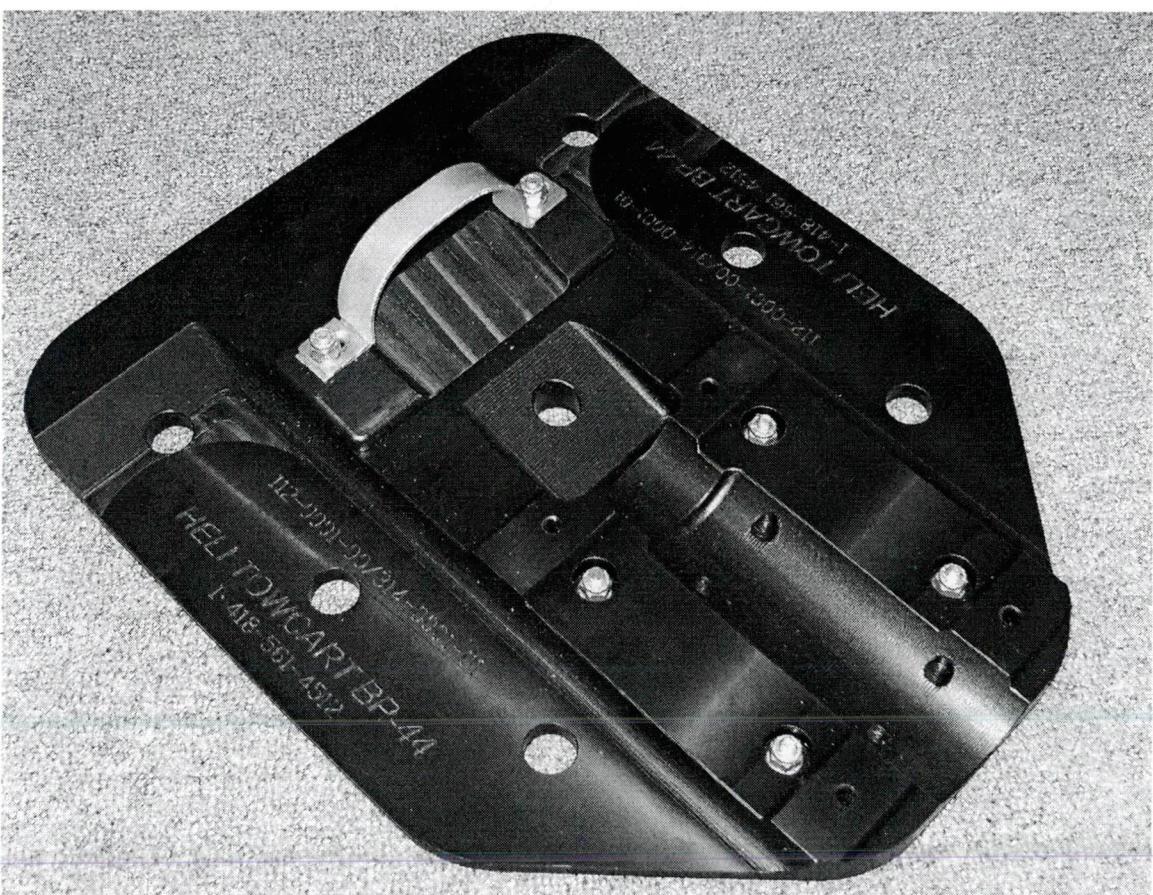
ON A 2 CLIENTS DIFFÉRENTS QUI  
L'ON DEMANDÉ.... DONC ON PROCÈDE.

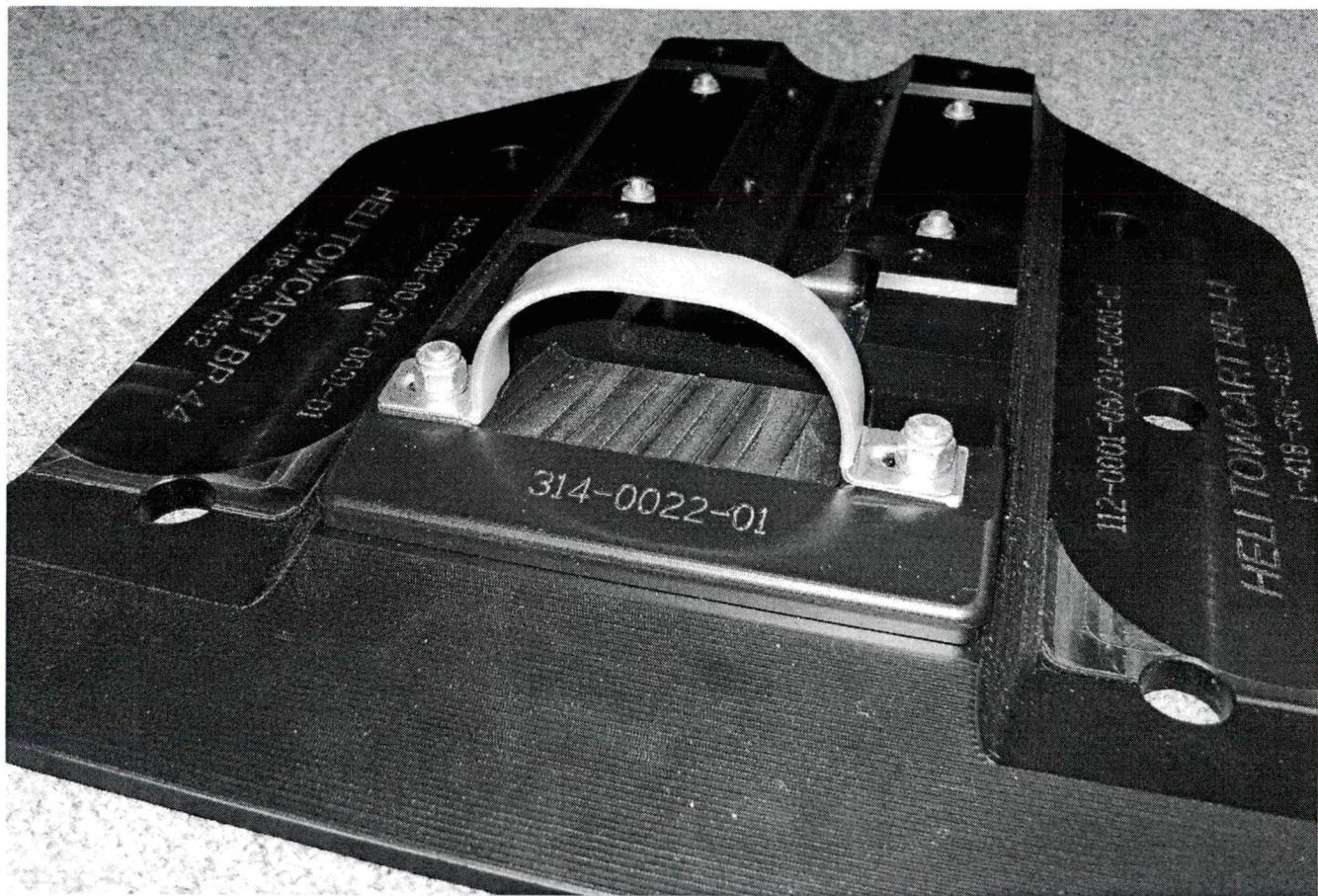
J'AI DÉJÀ IDENTIFIÉ TOUTS LES DÉTAILS À  
L'ETAT À JOUR POUR FACILITER LE TRAVAIL  
DE SIMON.

LUCIEN A ESSAYÉ AVEC CHRIS ET CELA  
FIT BIEN.

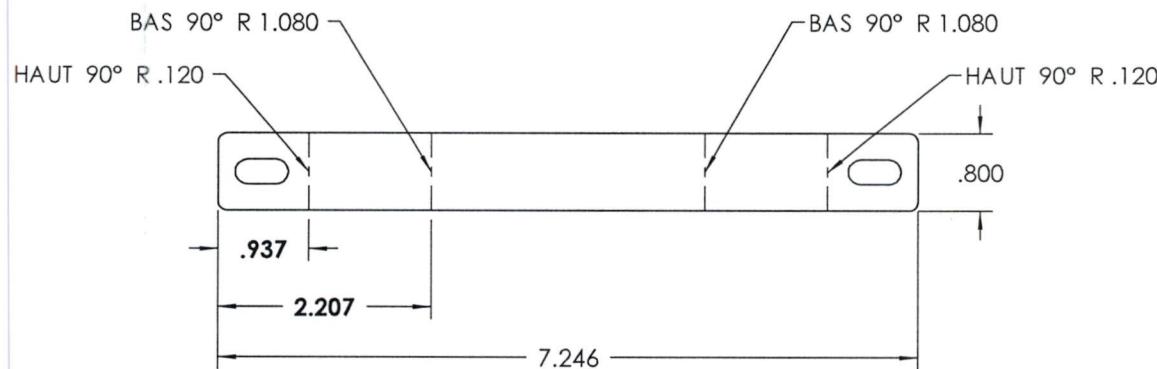
merci!

Nathalie

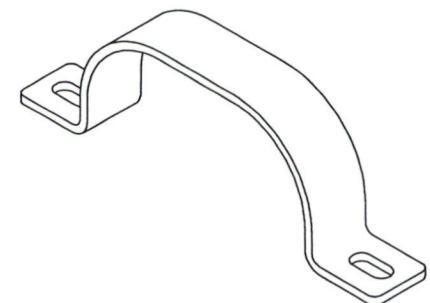
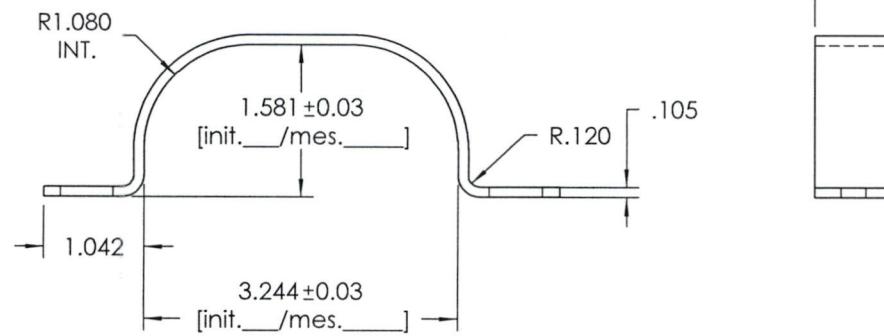
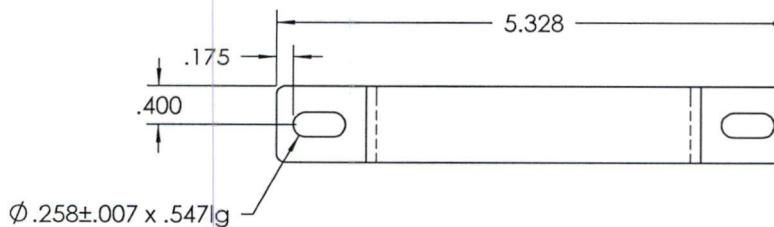




NO.	MATÉRIEL	ÉPAISSEUR	QTE / TOT.
1	SS 304 2B	0.105	36



**\*\*Arrondir toute les arêtes au rayon 1/64" tout le tour et remplir la feuille d'inspection du client\*\***



TOLÉRANCE  
(SI NON SPÉCIFIÉES)  
XX = ±0.100"  
XXX = ±0.010"  
XXX = ±0.005"  
FRACTION = ±1/32"  
ANGLE = ±1°

CE DESSIN EST LA  
PROPRIÉTÉ DE CÔTÉ INOX  
TOUS DROITS RÉSERVÉS  
  
THIS DRAWING IS THE  
PROPERTY OF CÔTÉ INOX  
ALL RIGHTS RESERVED

RESPONSABLE:  
S.C.  
DESSINÉ PAR:  
S.P.  
VÉRIFIÉ PAR:

CLIENT:  
**HELI TOW CART**  
PROJET:  
10-0552-01  
NOM PIÈCE / ASSEMBLAGE:  
**LOW U SHAPED**

TYPE DE DÉCOUPE:  
LASER  
DESSIN NO:  
**314-0023-15A\_rev2**  
ECHELLE:  
1:2

REV:  
2  
DATE:  
2010-02-23  
Page 1 de 2

4.

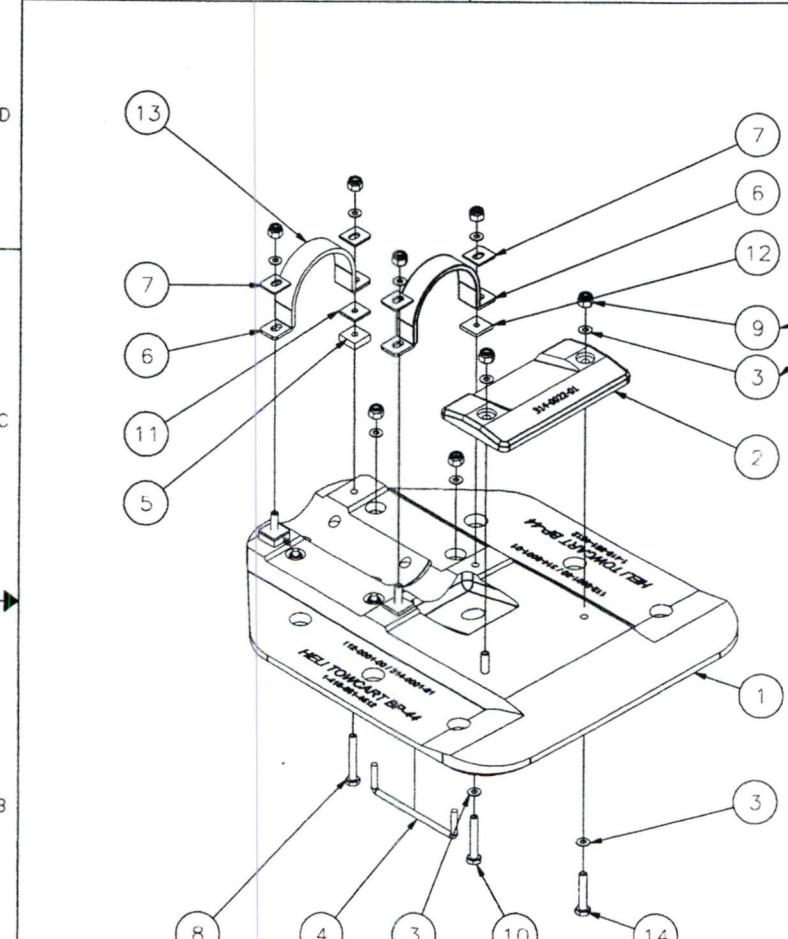
3

2

1

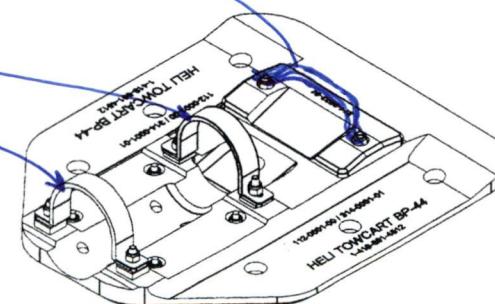
112-0001-00-0

1 OF 1



NOTE:  
 1. ICEBLADE ASSEMBLY CAN BE OMITTED FROM INSTALLATION (OPTIONAL)  
 2. FASTENERS LENGTH TO BE DETERMINED AT THE INSTALLATION

New:  
 Low Uclip P/N 314.0023-15



ISO  
SCALE 1 / 4

ITEM	QTY	PART NO. & JR	DESCRIPTION	MATERIAL	SIZE
14	2	261.0004.17.A	BOLT AN4.15A	STEEL	1/4
13	2	314.0016.05.A	BEARPAW SHRINK 1X5	RUBBER	
12	2	314.0015.01.A	BEARPAW FILLER BLOCK 1/8	THMW	1/8
11	2	314.0014.01.A	BEARPAW FILLER BLOCK 3/32	THMW	3/32
9	2	261.0002.17.A	BOLT AN4.15A	STEEL	1/4
10	10	262.0001.17.A	NUT MS20-365.428	STEEL	1/4
8	2	261.0003.17.A	BOLT AN4.16A	STEEL	1/4
7	4	314.0007.15.B	BEARPAW SLOTTED CLIP SUPPORT	STEEL	
6	2	314.0006.15.C	BEARPAW U-SHAPE CLIP	STEEL	
5	2	314.0012.01.A	BEARPAW FILLER BLOCK 1/4	THMW	1/4
4	2	314.0005.15.A	BEARPAW ICE BLADE ASSEMBLY	STEEL	
3	16	263.0001.17.A	WASHER AN960.416	STEEL	1/4
2	1	314.0022.01.A	BEARPAW FILLER BLOCK REAR	THMW	1/2
1	1	314.0001.01.B	BEARPAW PAD	THMW	

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE DESIGN OR MANUFACTURE OR PROCUREMENT OF THE PART OR ANY SIMILAR PARTS. IT IS REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART	REVISIONS
	<input type="checkbox"/> REWORKABLE <input checked="" type="checkbox"/> NO REWORKABLE <input type="checkbox"/> NOTED <input checked="" type="checkbox"/> MA
ZONE REV	DESCRIPTION
A	ISSUE FOR PRODUCTION
B	MODIFY BOLT MODEL AND ADD FILLER BLOCK
C	MODIFY BOLT MODEL AND ADD FILLER BLOCK AND SHRINK
D	ADDITION OF STREAMLINE PAD CONFIGURATION

OHELI  
TOW CART  
STREAMLINE ASSEMBLY

DRAWING NO. 112-0001-00-D  
DATE 2009-10-22  
REV. A

APPROVED: *P. Baile* DATE 2009-10-22  
APPROVED: *P. Baile* DATE 2009-10-22  
APPROVED: *P. Baile* DATE 2009-10-22  
APPROVED: *P. Baile* DATE 2009-10-22

4

3

2

2009-01-06  
 P. Baile

112-0001-00-D  
 P. Baile

TABLE OF CONTENTS:

<b>INTRODUCTION</b>	<b>p.2</b>
Scope	p.2
General	p.2
Helicopter Effectivity	p.2
Installer Responsibilities	p.2
<b>INSTALLATION</b>	<b>p.3</b>
BearPaw Installation	p.3
BearPaw Removal	p.5
Weight & Balance	p.5
Parts List	p.6
<b>INSPECTION</b>	<b>p.7</b>
Life Limited Items	p.7
Pre-Flight	p.7
Periodic Inspection Schedule	p.7
300 Hour or Yearly Inspection Details	p.7
Overhaul Requirements	p.8
<b>REVISIONS &amp; APPROVAL</b>	<b>p.8</b>
Annex A (BearPaw Assembly Drawing)	
Annex B (BearPaw Pad Allowable Damage Drawing)	

\* Tries à jour Suggérées  
VS Ajout 3<sup>e</sup> J-CLIP à BP44



  
2010 03 30

## INTRODUCTION

### Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw for your Robinson R44.

### General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

**Table 1 – Helitowcart Customer Support**

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 <a href="mailto:info@helitowcart.com">info@helitowcart.com</a>

### Helicopter Effectivity

This installation instruction applies to the following ROBINSON Helicopters:

**Table 2 – Robinson Helicopter Effectivity**

A/C Model	Serial no.	Type Certificate Data Sheet
R44	0271 thru 9999	H11NM
R44 II	1140, 10001 and subsequent	H11NM

### Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

## INSTALLATION

## BearPaw Installation

## Reference Documentation:

[1] Robinson R44 - Maintenance Manual & Instruction for Continued Airworthiness. RTR460.  
[2] Annex A – BearPaw Assembly Drawing (112-0001-00)

## Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);
- Remove aft skid wearshoe & re-install the attaching screws.

## Step 2: BearPaw Preparation

- With IceBlade Option: Install ice blades (Qty:2) under BearPaw pad as per drawing (112-0001-00) Ref [2];
- With IceBlade Option: Insert washer (Washer P/N 263-0001-17) through threaded part of the ice blade and secure with nut (P/N 262-0001-17);
- With the Streamline version of the Bearpaw (P/N 112-0001-00-D), install <sup>REAR</sup> filler block (P/N 314-0022-01) with two bolts (P/N 261-0004-17), four washers (P/N 263-0001-17) ~~and two nuts (P/N 262-0001-17)~~ as per drawing (112-0001-00-D) Ref [2];
- Position the BearPaw under skid at the aft intersection with the cross tube as per figure 1 with narrow edge pointing forward.

### Step 3: BearPaw Set Up

- Insert washers (P/N 263-0001-17) through all four bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert bolts(P/N261-0002-17) & (261-0003-17) and washer (P/N 263-0001-17) through BearPaw pad as per drawing (112-0001-00) Ref [2]
- Insert **SMALL** **filler** blocks (P/N314-0012-01) & (P/N314-0014-01) at front of BearPaw& Insert filler blocks (P/N314-0015-01) at rear of BearPaw as per drawing (112-0001-00) Ref [2];
- The use of filler blocks mentioned above may be replaced or complemented by the use of washers (P/N 263-0001-17). Bolts (P/N261-0002-17) & (261-0003-17) may be replaced by longer or shorter AN4 bolts as required.
- Insert both U-shaped clips (P/N 314-0006-15) through bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);  
**Insert 2 washers (P/N 263-0001-17)** **FRONT** **CENTER** **STX** **and then INSERT LOW U CLIP (P/N 314-0023-15)**
- Insert slotted clip supports (P/N 314-0007-15) through all **four** bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

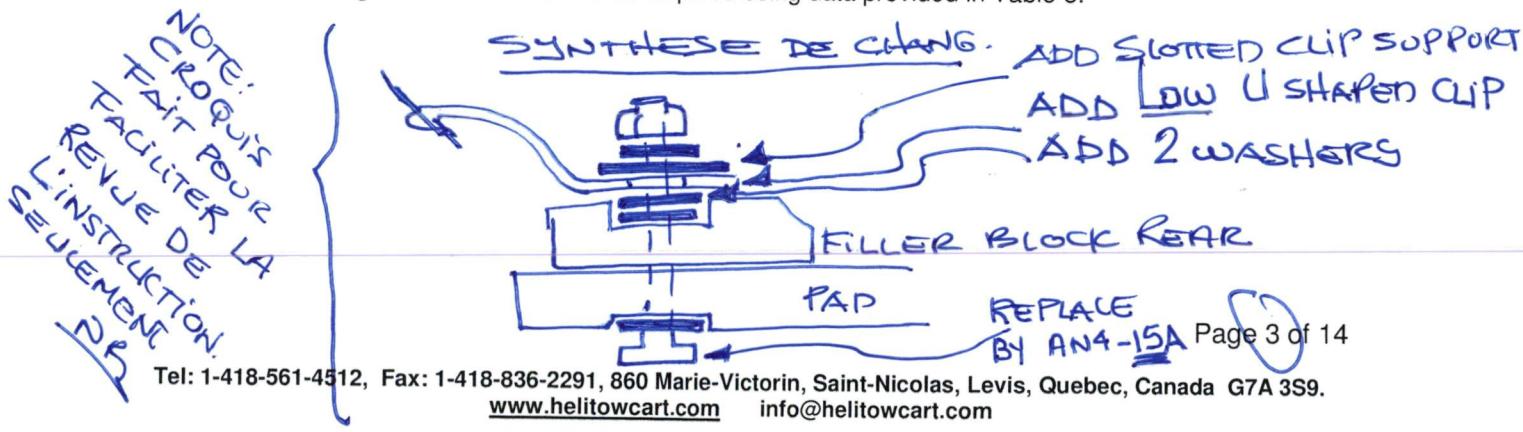


Figure 1 - Installed BearPaw Model BP44

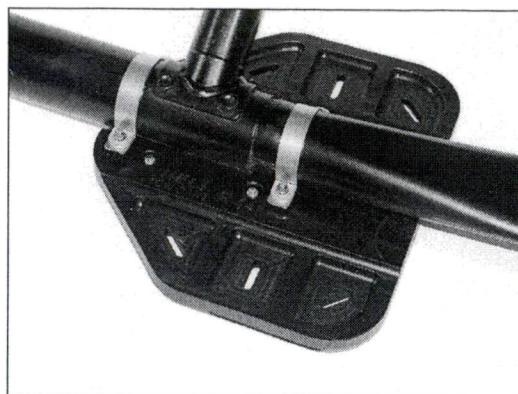
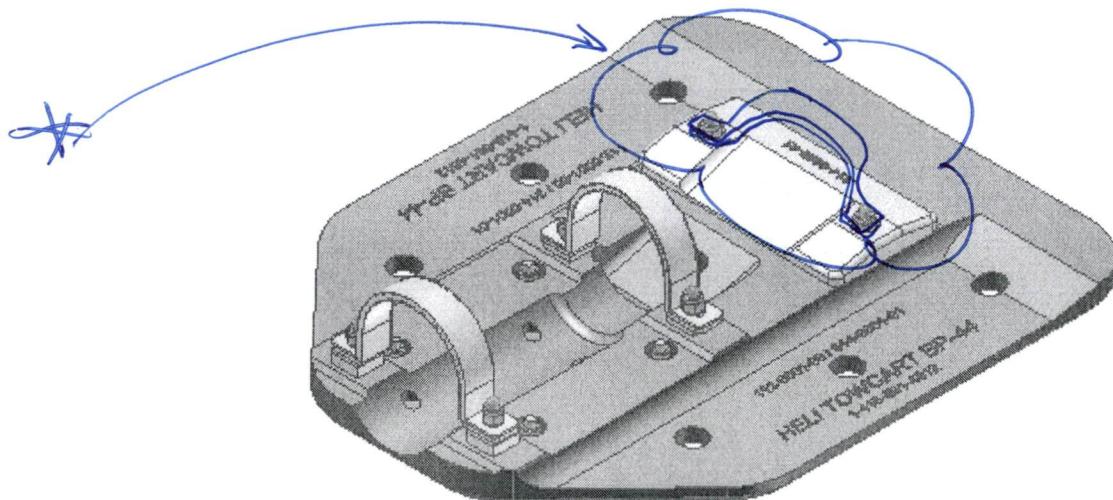


Figure 2 - BearPaw Model BP44 Streamline



### **BearPaw Removal**

#### Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

#### Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15), U-shaped clips (P/N 314-0006-15) and remove BearPaw pad (P/N 314-0001-01);
- Inspect skid tubes to confirm serviceability;
- Re-install aft wearshoe with screws as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required.

### **Weight & Balance**

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

**Table 3 – Weight & Balance Data**

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP44	5.9 Lb 2.7 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	758.1 in-lb 8.8 m-kg
Helitowcart BearPaw Model BP44 - Streamline	6.9 Lb 3.1 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	886.6 in-lb 10.1 m-kg

### Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

Table 4 – Parts List

Description	Qty	Part No.	Name (Drawing no.)
<b>BearPaw Model BP44</b>	1	112-0001-00	<b>112-0001-00-C / BearPaw Assembly</b> <b>112-0001-00-D / BearPaw Streamline Assembly</b>
BearPaw pad	1	314-0001-01	314-0001-01-A / BearPaw – Pad (VNR088) 314-0001-01-B / BearPaw – Pad Streamline
U Shaped Clips	2	314-0006-15	BearPaw - U Shaped Clips (VNR087)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks	1	314-0022-01	BearPaw – Filler block Rear
Filler blocks 1/4"	2	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Filler blocks 3/32"	2	314-0014-01	BearPaw – Filler block 3/32" (VNR103)
Filler blocks 1/8"	2	314-0015-01	BearPaw – Filler block 1/8" (VNR104)
Bolts	4	261-0002-17	Bolt- AN4-15
Bolts	2	261-0003-17	Bolt- AN4-16
Bolts	X	261-0004-17	Bolt- AN4-13 *Note: for Streamline Assembly
Nuts	4 *(+2)	262-0001-17	Nut- MS20-365-428 *Note: +2 for Streamline Assembly
Washers	8 *(+8)	263-0001-17	Washer – AN960-416 *Note: +8 for Streamline Assembly
Shrink	1	314-0016-00	BearPaw – Shrink Specifications & Installation
<b>IceBlade Option Model OIB</b>	2	314-0005-15	<b>VNR086 / IceBlade Assembly</b>
Nuts	4	262-0001-17	Nut- MS20-365-428
Washers	4	263-0001-17	Washer – AN960-416

Low u shaped clip 1 314-0023-15 Bearpaw- Low U shaped Clip.

## INSPECTION

### Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

### Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:

Table 5 – Tolerances for cracks & wear;

Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2) or  
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

### Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 300 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the R44 landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 300 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

### 300 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:  
 Table 5 – Tolerances for cracks & wear;  
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2); or  
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

**Table 5 – Tolerances for Cracks & Wear**

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,350	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Stiffeners:</u> NO cracks in stiffeners. <u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,350	0,050	

? REAR FILLER BLOCK ?

E	N/A	N/A	No cracks allowed in zone E
F	0,350	0,050	For P/N 314-0001-01-B Only
G	0,75	0,050	For P/N 314-0001-01-B Only

### Overhaul Requirements

- Not applicable for the designated application of this device.

### REVISIONS & APPROVAL

#### Revisions

Date	Rev	Nature of Revisions
October 22, 2009	C	Introduction of new streamline BearPaw Pad configuration as alternate.
September 7, 2006	B	- Added filler blocks and heat shrink to product list. - Modified recommended bolt models (lengthened) - Revised inspection requirements from 100 hour to 300 hour intervals. - Identification of the IceBlade assembly as an optional feature.
June 12, 2006	A	Initial issue

*a*

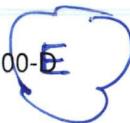
*D* / Intro of 3<sup>rd</sup> U shaped clip

#### Approval

Internal Approval :		
Helitowcart inc.	<i>Lucien Barbeau</i> Lucien Barbeau, President	October 22, 2009
External Approval :		
Transport Canada	<i>Mirko Zgela</i> Mirko Zgela, DAR #310	October 22, 2009

#### Annex A

See: BearPaw Assembly, drawing no. 112-0001-00-C  
 BearPaw Streamline Assembly, drawing no. 112-0001-00-E



#### Annex B

See: BearPaw Pad Allowable Damage Drawing, drawing no. 314-0001-01-A (VNR088) page 2 of 2.  
 BearPaw Streamline Allowable Damage Drawing, drawing no. 314-0001-01-B page 3 of 3)

? REAR  
 FILLET  
 BLOCK?

Page 8 of 14

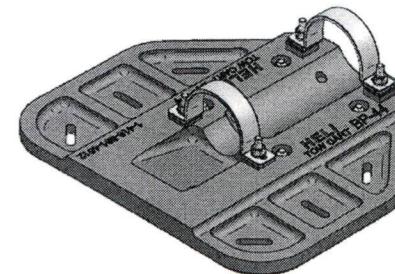
**Annex A**

BearPaw Assembly, Drawing no. 112-0001-00-C  
BearPaw Streamline Assembly, Drawing no. 112-0001-00-D

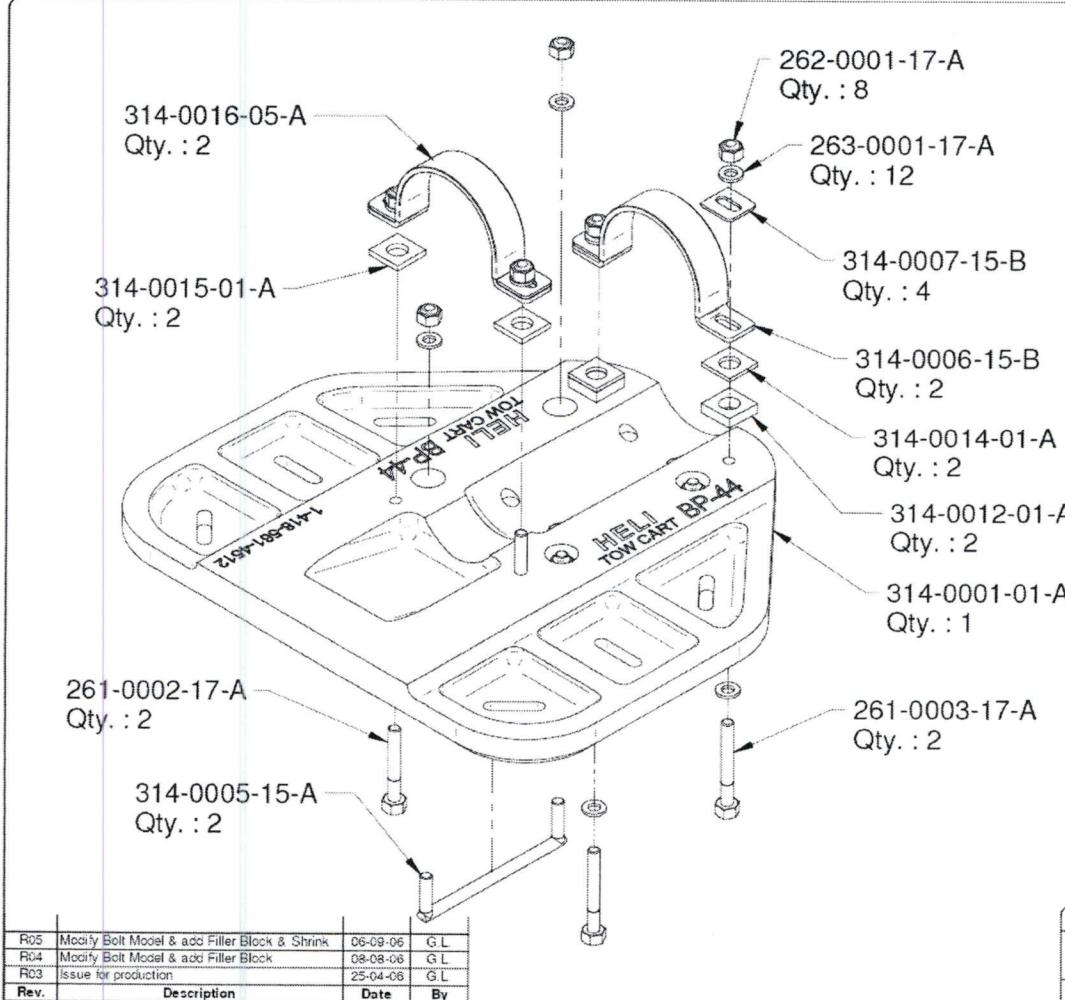


## 314-0011-00-A Rev C BearPaw Model BP44 Installation Instructions - R44

N°	Qty	Description	Part #
1'	1	Bearpaw - Pad	314-0001-01-A
2'	2	Bearpaw - Iceblade assembly	314-0005-15-A
3'	2	Bearpaw - U Shaped clip	314-0006-15-B
4'	4	Bearpaw - Slotted clip support	314-0007-15-B
5'	8	Nut MS20-365-428	262-0001-17-A
6'	12	washer AN960-416	263-0001-17-A
7'	2	Bolt AN4-15A	261-0002-17-A
8'	2	Bearpaw - Filler Block 1/4"	314-0012-01-A
9'	2	Bolt AN4-16A	261-0003-17-A
10'	2	Bearpaw - Shrink 1x5"	314-0016-05-A
11'	2	Bearpaw - Filler Block 1/8"	314-0015-01-A
12'	2	Bearpaw - Filler Block 3/32"	314-0014-01-A

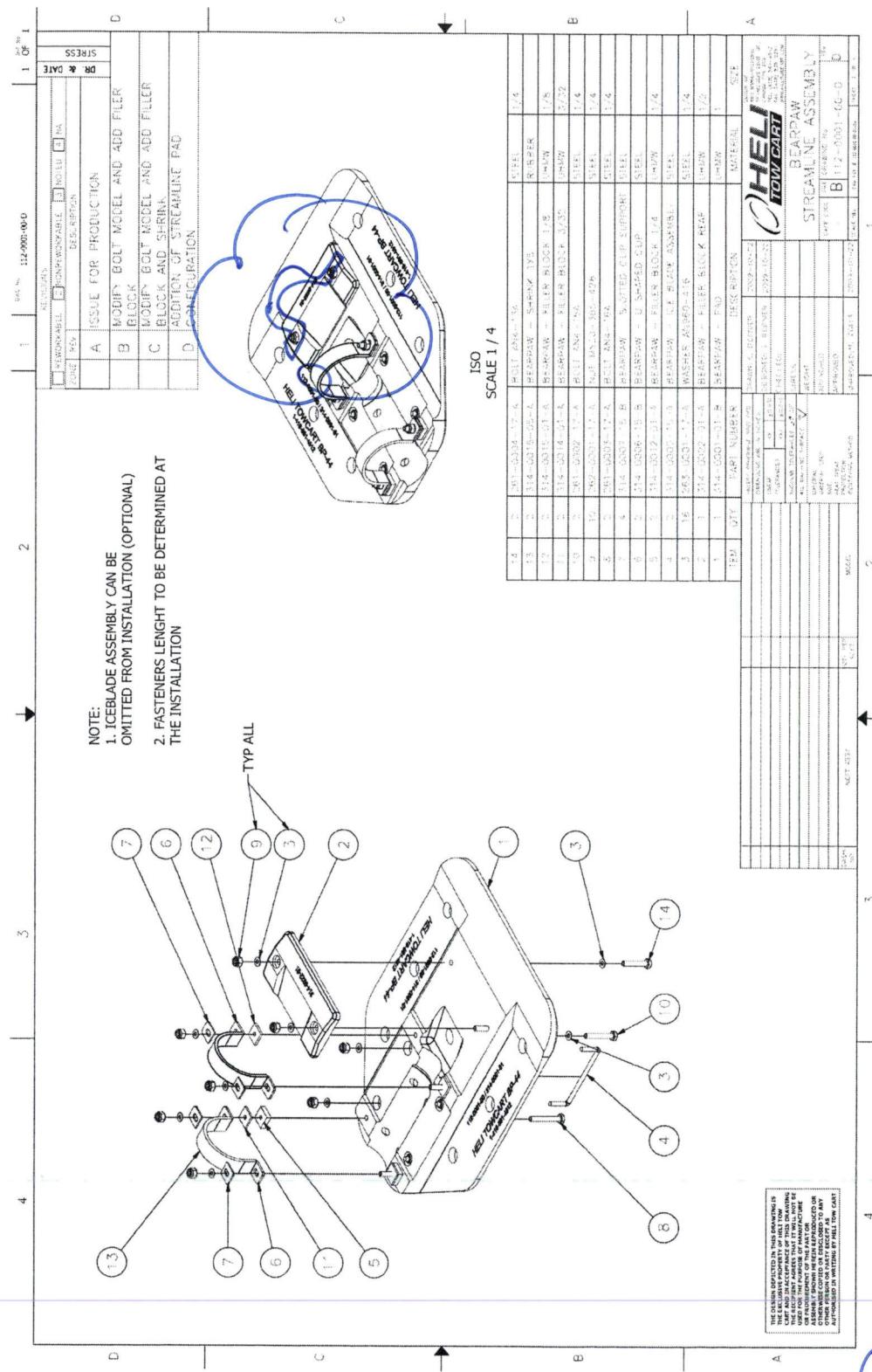


NOTE : Iceblade assembly can be omitted from installation (Optional)



Rev.	Description	Date	By
R05	Modify Bolt Model & add Filler Block & Shrink	06-09-06	G.L
R04	Modify Bolt Model & add Filler Block	08-08-06	G.L
R03	Issue for production	25-04-06	G.L

TOLERANCES		Bearpaw Assembly		Master Model	
139 ± 0.25		Length of Lateral	Date Approved	Printed	
X XXX ± 0.016		Length of Lateral	2006-04-25	Printed	1 de 1
X XXX ± 0.038"		Width of Lateral	Date Approved	Printed	
ANGLE ± 1°		Width of Lateral		Printed	R05
		Approved by :	Date Approved	Number of sheet / Part Number	
				112-0001-00-C	

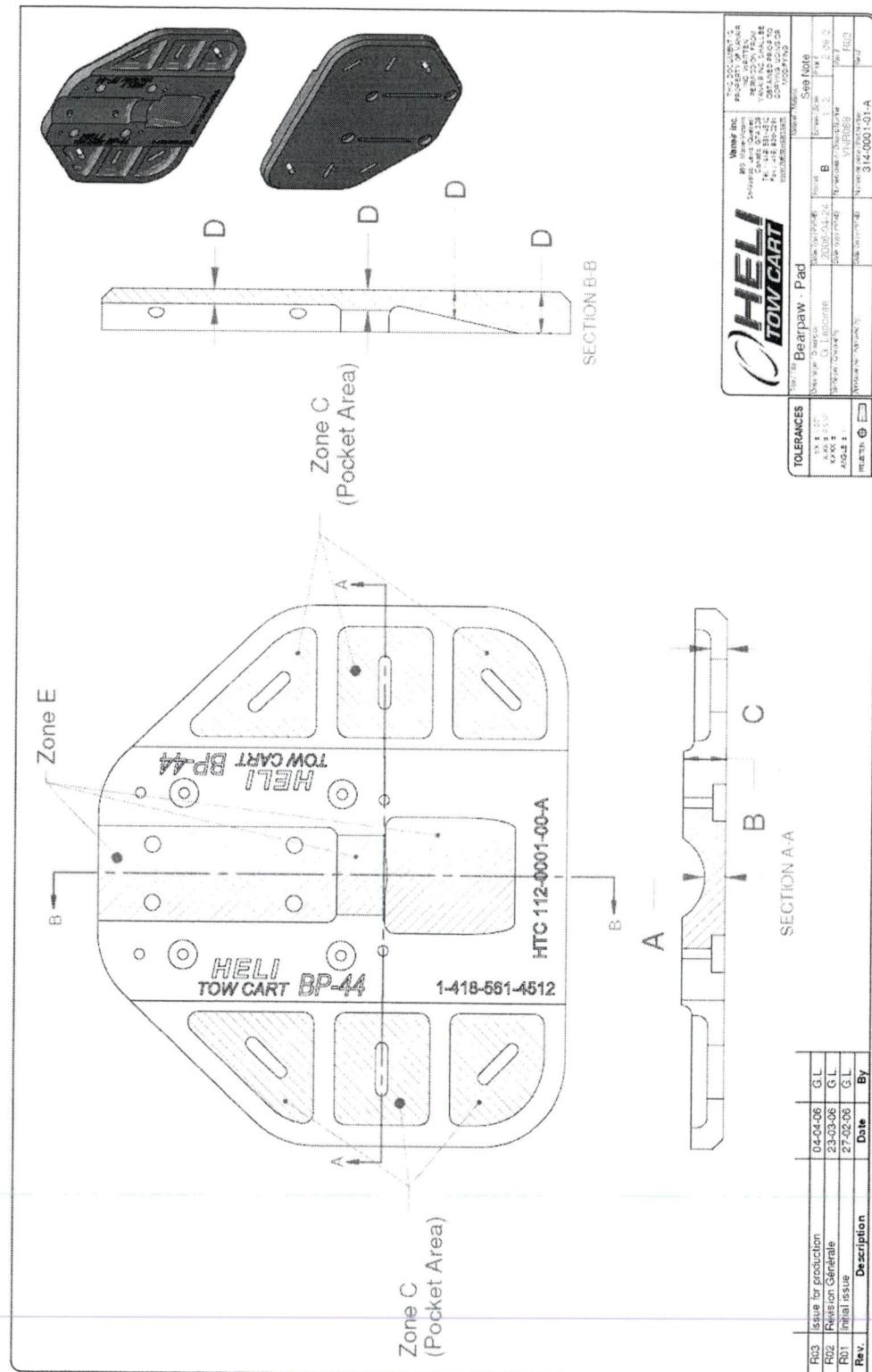


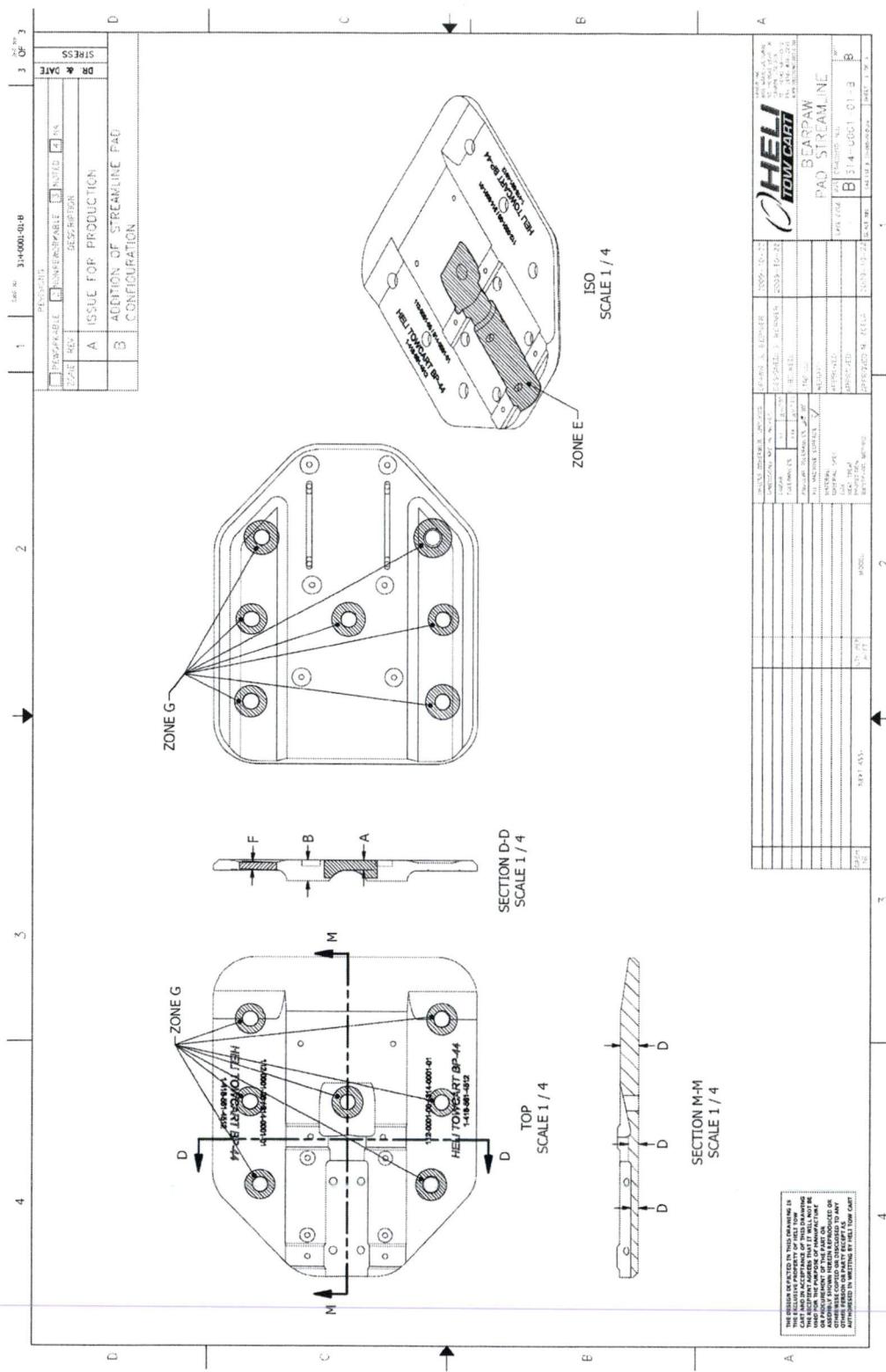
THE DRAWINGS ARE NOT DRAWN TO SCALE.  
THE DRAWINGS ARE NOT DRAWN TO SCALE.

**Annex B**

BearPaw Pad Allowable Damage Drawing, Drawing no. 314-0001-01-A (VNR088), Page 2 of 2  
BearPaw Streamline Allowable Damage Drawing, Drawing no. 314-0001-01-B, Page 3 of 3

(? Rear filler block ?)

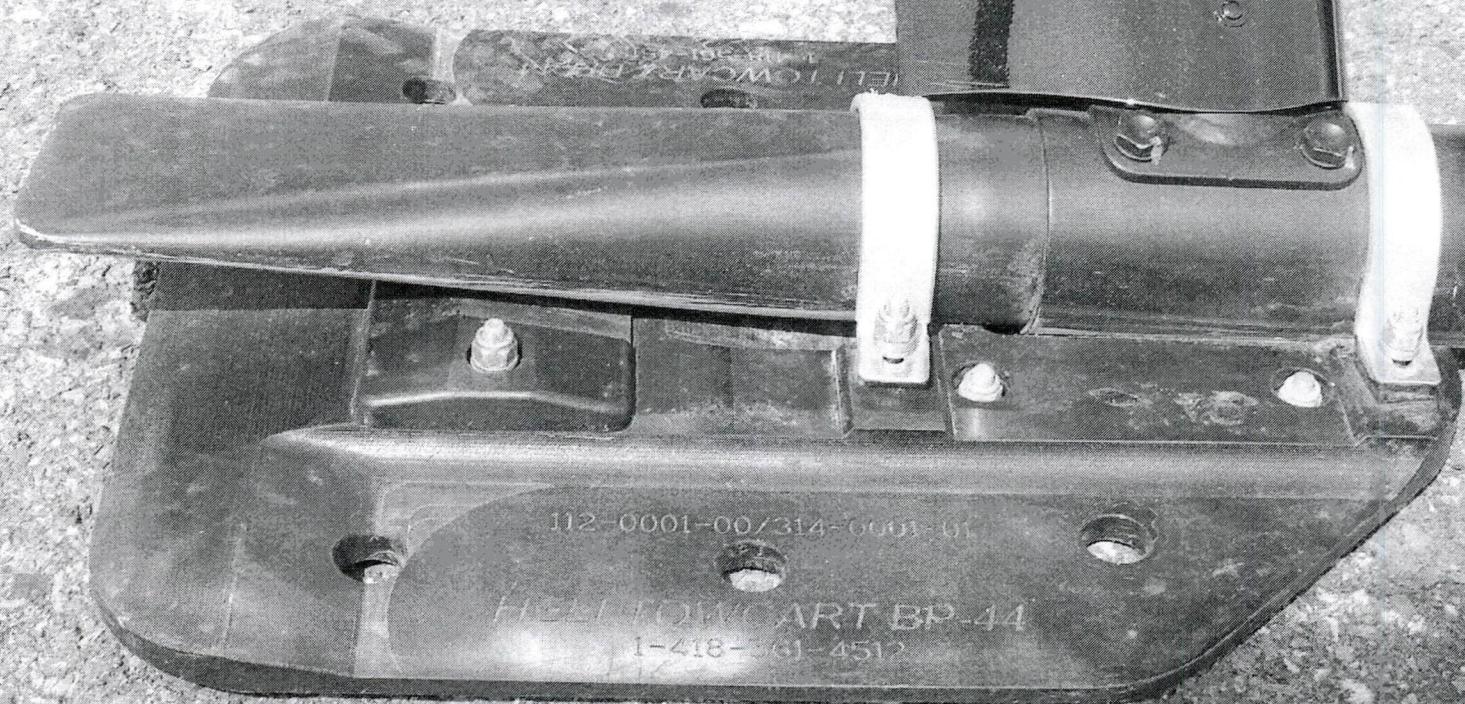




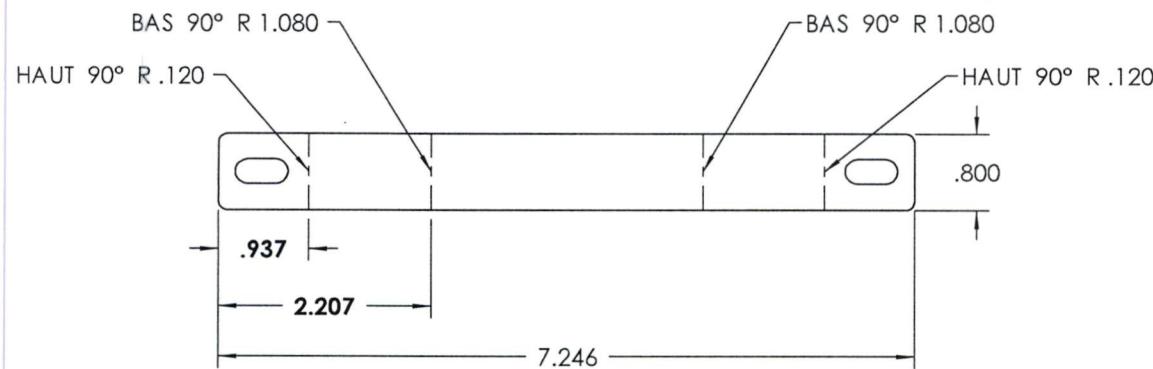


112-0001-00/314-0001-01

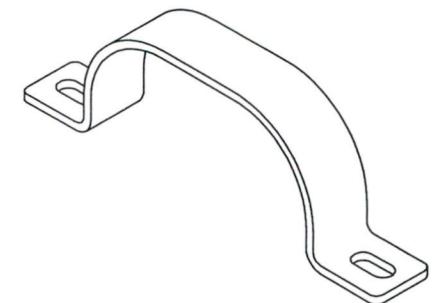
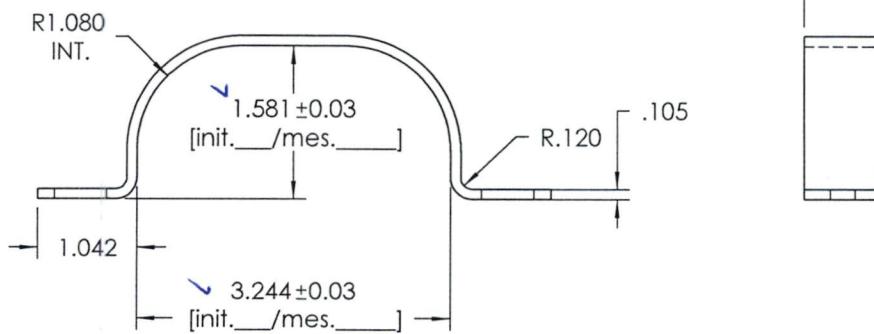
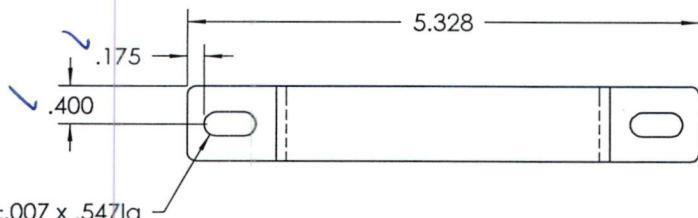
TOWCART BD-44  
118-561-452



NO.	MATÉRIEL	ÉPAISSEUR	QTE / TOP
1	SS 304 2B	0.105	36



\*\*Arrondir toute les arêtes au rayon 1/64" tout le tour et remplir la feuille d'inspection du client\*\*



*D. Baileau 20.04.23*

 <b>CÔTÉ INOX</b>	TOLÉRANCE (SI NON SPÉCIFIÉES)	CE DESSIN EST LA PROPRIÉTÉ DE CÔTÉ INOX TOUS DROITS RÉSERVÉS	RESPONSABLE:	CLIENT:	TYPE DE DÉCOUPE: LASER
			S.C.	<b>HELI TOW CART</b>	
			DESSINÉ PAR: S.P.	PROJET: 10-0552-01	DESSIN NO: <b>314-0023-15A_rev2</b>
			VÉRIFIÉ PAR:	NOM PIÈCE / ASSEMBLAGE: LOW U SHAPED	REV: 2
				ECHELLE: 1:2	DATE: 2010-02-23
					Page 1 de 2

## Nathalie Barbeau

---

**From:** Sébastien Corriveau [scorriveau@coteinox.com]  
**Sent:** March 18, 2010 12:42 PM  
**To:** Nathalie Barbeau  
**Subject:** RE: Helitowcart: Les modifs au LOW U CLIP pour Bearpaw 44

**Attachments:** 314-0023-15A\_rev2 - Feui.pdf

Bonjour Nathalie,

encore moi, je t'envois le dessin revisé

check ça et revient moi la-dessus, même chose

pour cette pièce, changer dans le rapport d'inspection

pour arrondir toutes les arêtes au rayon 1/64" environ.

merci et bonne journée

---

**De :** Nathalie Barbeau [mailto:nbarbeau@helitowcart.com]

**Envoyé :** 17 mars 2010 15:19

**À :** Sébastien Corriveau

**Objet :** Helitowcart: Les modifs au LOW U CLIP pour Bearpaw 44

Allo Sébastien,

Voici les modifications que j'aurai besoin sur le LOW U Clip que vous nous avez fait la semaine dernière. On a en fait besoin qu'il soit fait selon les mêmes paramètres que celui régulier (314 0006 15), mais sa seule différence est au niveau de la profondeur et de la forme aplatie du U. (Donc même matériel, épaisseur, largeur, slots, fini des rebords, etc).

Je compte possiblement faire produire à nouveau ces LOW U Clip très prochainement.

Si on met à jour le dessin maintenant, on pourra vous donner le ok plus vite.

On rencontre la firme d'ingénieur ce vendredi pour régler cela au niveau réglementaire.

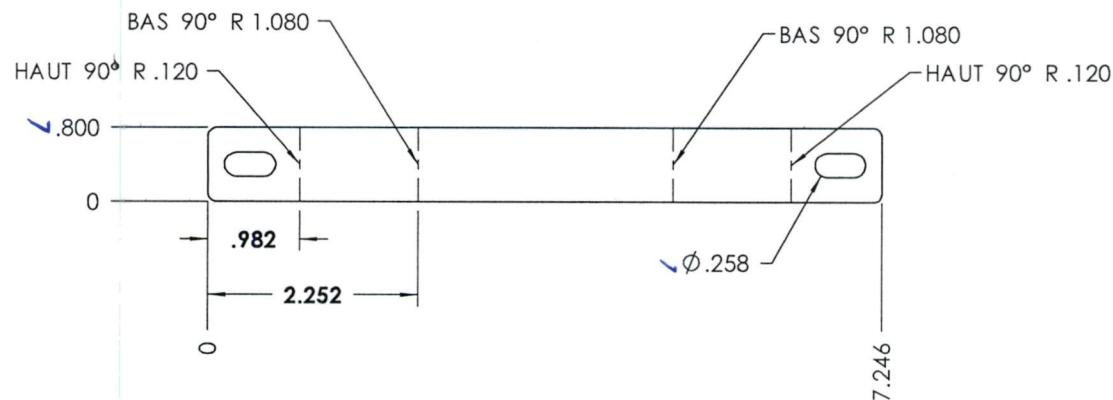
Trouve donc ci-joint le dessin que j'ai annoté le mieux que je pouvais et aussi un dessin d'ensemble pour que tu vois à quel endroit on met les U clips réguliers (les plus arrondis) et les nouveaux U clips LOW que nous voulons mettre à l'arrière du bearpaw. Des bearpaws sont en fait des raquettes d'hélico (si cela peut t'aider).

Merci!

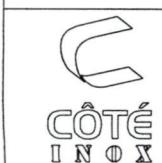
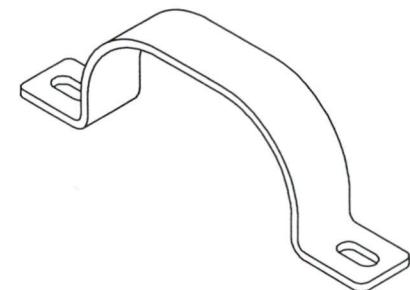
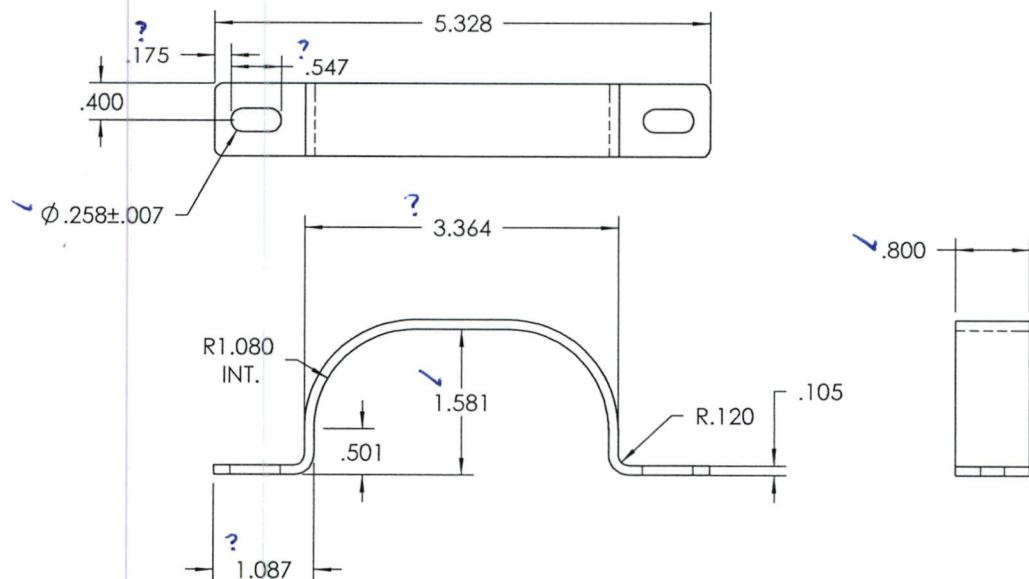
Nathalie Barbeau  
VP Commercial Affairs

**Helitowcart (Vanair inc.)**  
877A Alphonse-Desrochers  
St-Nicolas, Lévis,  
Québec, Canada, G7A 5K6  
main tel: +1 418 561 4512  
plant tel: +1 418 836 4525  
plant fax: +1 418 836 4575  
[nbarbeau@helitowcart.com](mailto:nbarbeau@helitowcart.com)  
[info@helitowcart.com](mailto:info@helitowcart.com)  
[www.helitowcart.com](http://www.helitowcart.com)

NO.	MATÉRIEL	ÉPAISSEUR	QTE / TOT.
1	SS 304 2B	0.105	36



\*\*Arrondir toutes les arêtes au rayon 1/64" environ tout le tour\*\*



TOLÉRANCE  
(SI NON SPÉCIFIÉES)  
X.X = ±0.100"  
X.XX = ±0.010"  
X.XXX = ±0.005"  
FRACTION = ±1/32"  
ANGLE = ±1°

CE DESSIN EST LA PROPRIÉTÉ DE CÔTÉ INOX  
TOUS DROITS RÉSERVÉS  
THIS DRAWING IS THE PROPERTY OF CÔTÉ INOX  
ALL RIGHTS RESERVED

RESPONSABLE:  
S.C.

CLIENT:  
**HELI TOW CART**

TYPE DE DÉCOUPE:  
LASER

DESSINÉ PAR:  
S.P.

PROJET:  
**10-0552-01**

DESSIN NO:  
**314-0023-15A\_rev2**

REV:  
2

VÉRIFIÉ PAR:

NOM PIÈCE / ASSEMBLAGE:  
**LOW U SHAPED**

ECHELLE:  
1:2

DATE:  
2010-02-23

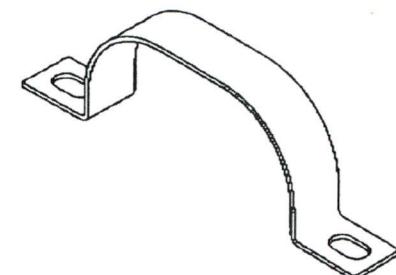
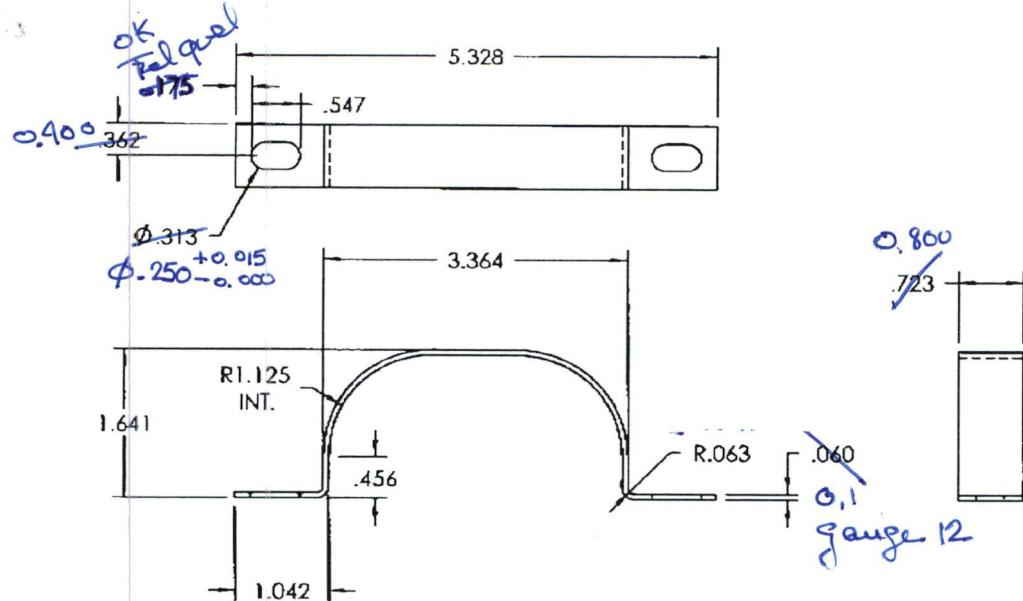
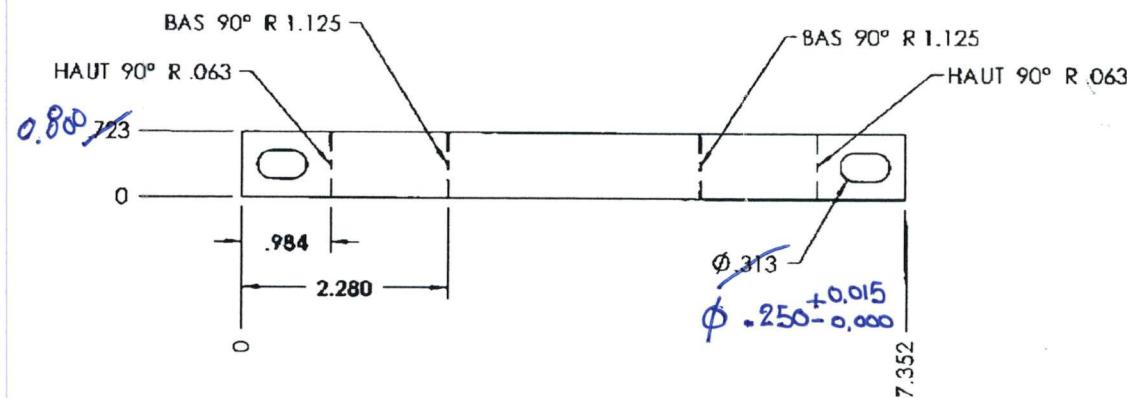
Page 1 de 2

001

COTE INOX

12/08/09 08:45 FAX 418 883 2703

001



RAW MATERIAL SPECIFICATION:  
STAINLESS STEEL 304 ANNEALED  
SHEET GAGE 12



TOLERANCE  
(SI NON SPÉCIFIÉE)  
XX = ±0.100"  
XXX = ±0.010"  
XXXX = ±0.005"  
FRACTION = ±1/32  
ANGLE = ±1°

CE DESSIN EST LA  
PROPRIÉTÉ DE CÔTE INOX  
TOUS DROITS RÉSERVÉS  
THIS DRAWING IS THE  
PROPERTY OF CÔTE INOX  
ALL RIGHTS RESERVED

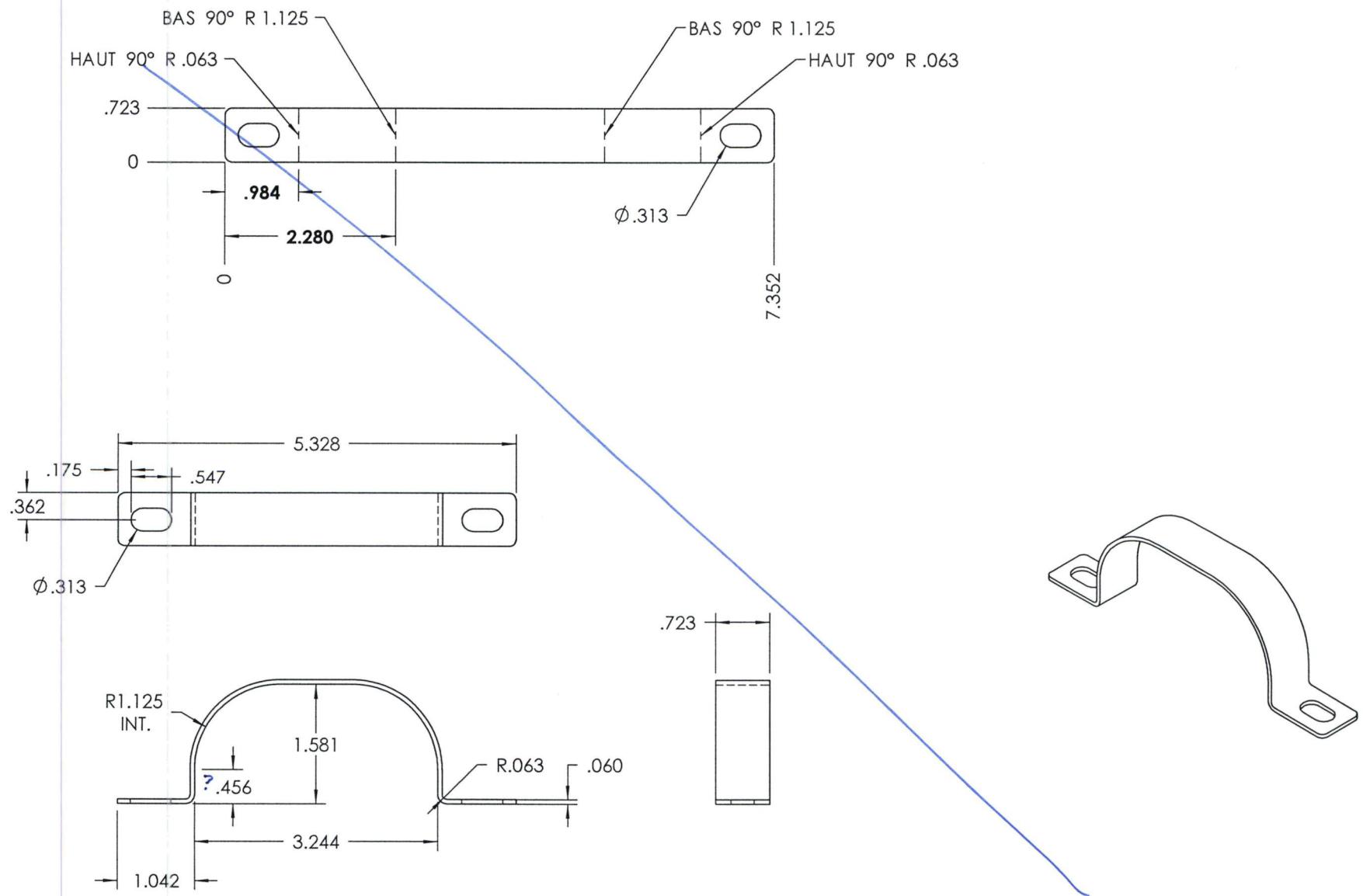
RESPONSABLE  
S.C.  
DESSINÉ PAR:  
S.P.  
VÉRIFIÉ PAR:

CLIENT:  
HELI TOW CART  
PROJET:  
10-0552-01  
NOM PIÈCE / ASSEMBLAGE:  
LOW U SHAPED

TYPE DE DÉCOUPE  
LASER  
DESSIN NO:  
314-0023-15A B  
ECHELLE  
1:2  
DATE  
2010-02-23  
Page 1 de 2

REV:  
2

NO.	MATÉRIEL	ÉPAISSEUR	QTE / TOT.
1	SS 304 2B	0.060	36



CÔTÉ  
INOX

TOLÉRANCE  
(SI NON SPÉCIFIÉES)

XX =  $\pm 0.100"$   
XXX =  $\pm 0.010"$   
XXXX =  $\pm 0.005"$   
FRACTION =  $\pm 1/32"$   
ANGLE =  $\pm 1^\circ$

CE DESSIN EST LA  
PROPRIÉTÉ DE CÔTÉ INOX  
TOUS DROITS RÉSERVÉS

THIS DRAWING IS THE  
PROPERTY OF CÔTÉ INOX  
ALL RIGHTS RESERVED

RESPONSABLE:  
S.C.

DESSINÉ PAR:  
S.P.

VÉRIFIÉ PAR:

CLIENT:  
**HELI TOW CART**

PROJET:  
10-0552-01

NOM PIÈCE / ASSEMBLAGE:  
**LOW U SHAPED**

TYPE DE DÉCOUPE:  
LASER

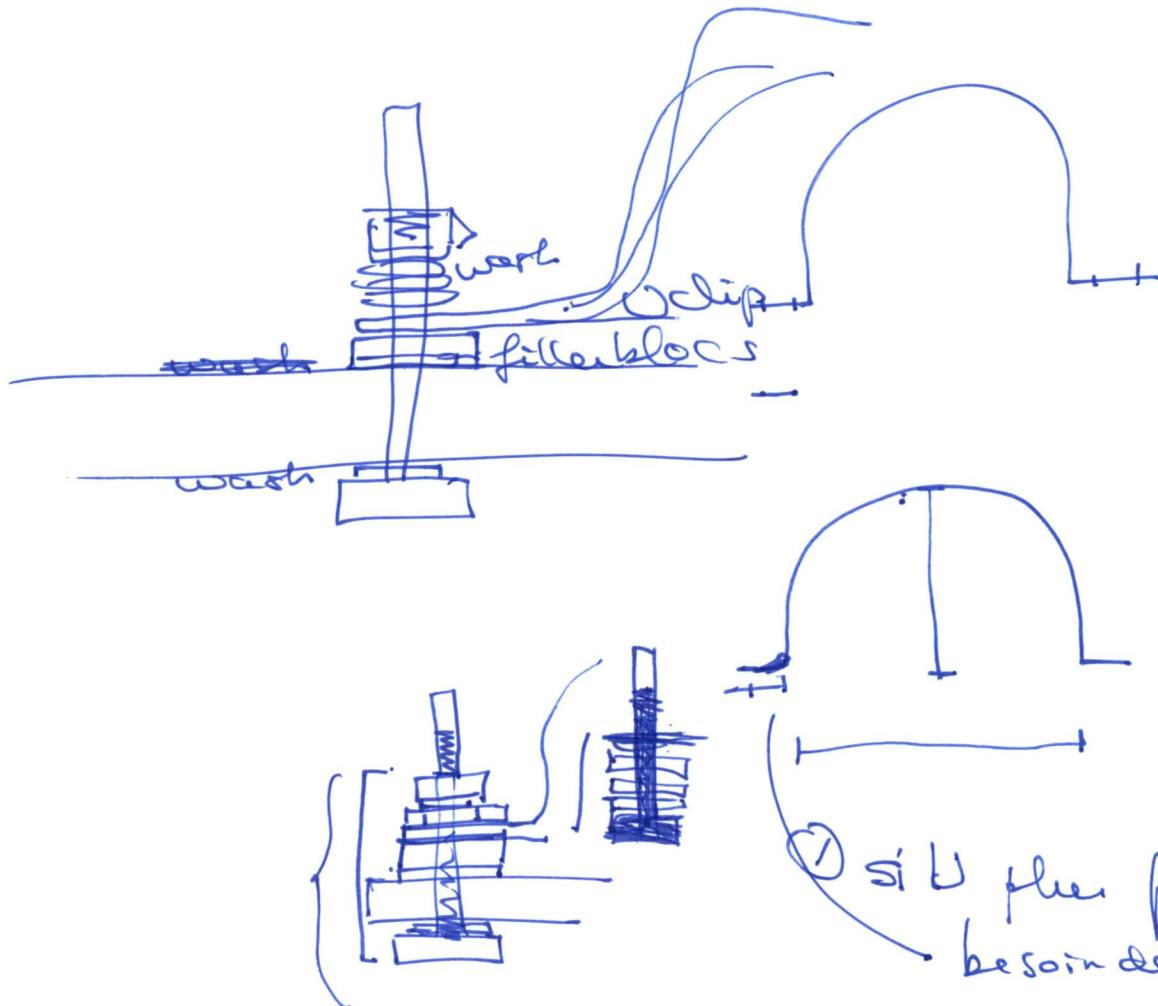
DESSIN NO:

**314-0023-15A**

REV:  
/

ECHELLE:  
1:2

DATE:  
2010-02-23  
Page 1 de 2



si U plus profond  
besoin de moins de filets . . .

donc bout de vis sort plus.  
et là ils mettent du worken !?  
pour remplir le dessus de VIS  
et qu'il n'y ait moins de filets  
qui s'attardent au bout ?

April 22, 2010

Object : Helitowcart – Back-Up APU Kit

To whom concerned,

This letter is to confirm how the APU kit offered within our quotation with the Helitowcart is designed to perform.

The Helitowcart model V614 was designed for helicopter ground handling. It was designed with a compact format to be transported into helicopters from base to base (heliport to heliport). This explains why we use small size batteries (Group 40) as we needed them to be as low height as possible for this compact cabinet.

All our tow carts operate with DEEP CYCLE batteries. This is a type of battery that is designed to withstand extended output of power in low doses. It is equipped with thick lead plates in order to provide a long range operation. This battery type should not be used on a constant basis for APU applications. This can damage the batteries. However, they can be used for APU application in case of emergency or occasional need if the operator is on a remote base and absolutely needs the power from the batteries. The batteries are foremost to provide power to the cart. Their main function is not for the APU.

This explains why our tow cart APU kit should only be used for emergency or occasional needs. If used on a regular basis, the batteries will degrade at a very fast rate and will need to be replaced after a very short lifespan.

Since we use 12 volts batteries, we can obtain a maximum of 24v output by linking the batteries together. In practice each of these batteries offers a bit more voltage above the 24v mark when fully charged. It is actually in this full charge battery condition that the batteries can offer up to 26volts if they are in top shape condition.

We have tested our system with an AW139 and with a B412. In both cases we have easily contributed to starting the helicopters. We ~~confirm~~ <sup>estimate</sup> that we can get 1000amps for up to 10 seconds from the battery pack but again, this should not be done on a regular basis.

We hope this information meets your needs,

Kind Regards,

batteries will be heavily  
discharged

Nathalie Barbeau  
VP Commercial Affairs  
Helitowcart

Bruno Martel  
VP Engineering & IT  
Helitowcart

4

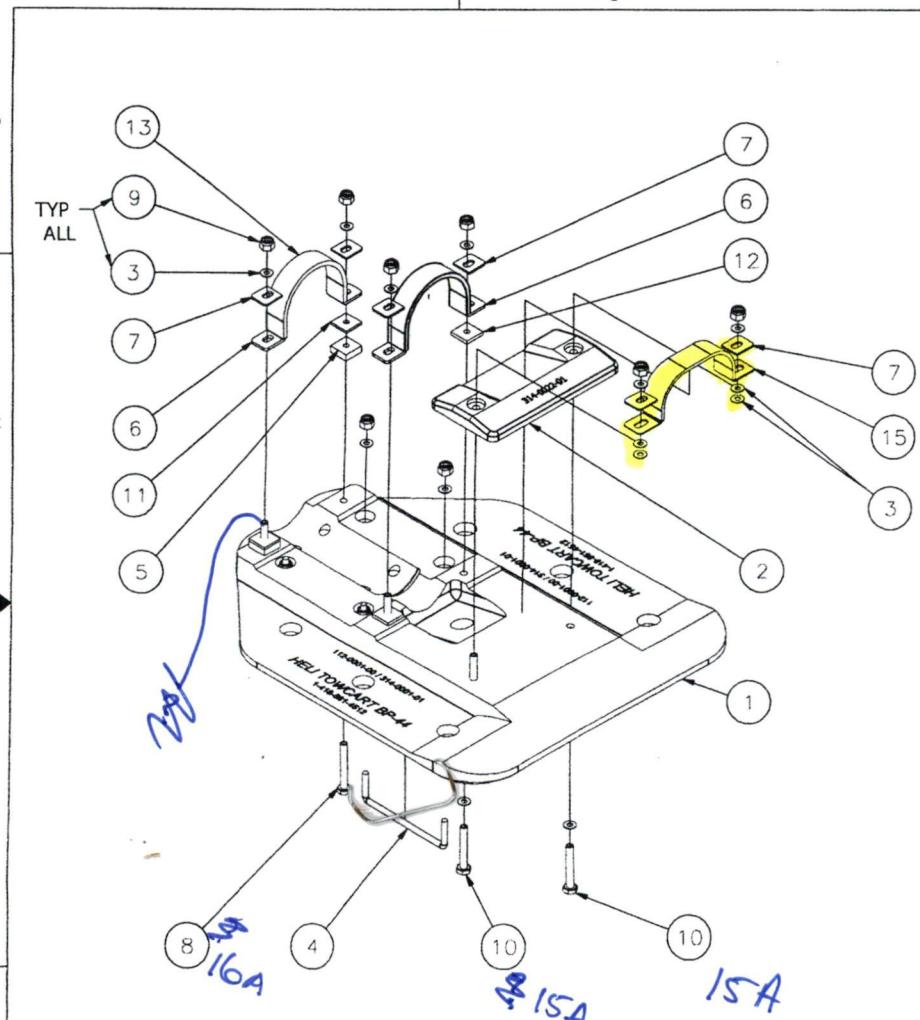
3

2

1

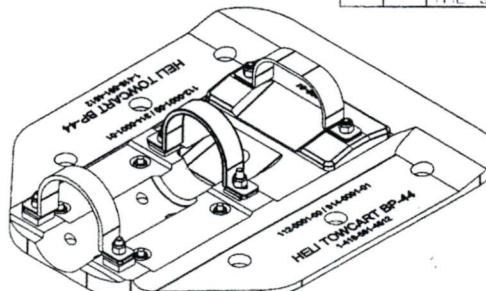
112-0001-00

1 OF 1



**NOTE:**

1. ICEBLADE ASSEMBLY CAN BE OMITTED FROM INSTALLATION (OPTIONAL)
2. FASTENERS LENGTH TO BE DETERMINED AT THE INSTALLATION



ISO  
SCALE 1 / 4

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SIZE
15	1	314-0023-15-A	HEARPAW U-SHAPED CLIP REAR	STEEL	
13	3	314-0016-05-A	SEARPAW SIE RINK 1X5	RUBBER	
12	2	314-0015-01-A	SEARPAW FILER BLOCK 1/8	UHMW	1/8
11	2	314-0014-01-A	HEARPAW FILER BLOCK 3/32	UHMW	3/32
10	4	261-0000-17-A	HOLT AN4 15A	STEEL	1/4
9	10	262-0001-17-A	NUT M520 365 418	STEEL	1/4
8	2	261-0003-17-A	HOLT AN4 16A	STEEL	1/4
7	6	314-0007-15-B	REARPAW SLOTTED CLIP SUPPORT	STEEL	
6	2	314-0006-15-B	BEARPAW U-SHAPED CLIP	STEEL	
5	2	314-0012-01-A	HEARPAW FILER BLOCK 1/4	UHMW	1/4
4	2	314-0005-15-A	HEARPAW ICE BLADE ASSEMBLY	STEEL	
3	20	263-0001-17-A	WASHER AN960 418	STEEL	1/4
2	1	314-0022-01-A	HEARPAW FILER BLOCK REAR	UHMW	1/2
1	1	314-0001-01-B	HEARPAW PAD	UHMW	-
FLM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SIZL

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORISED IN WRITING BY HELI TOW CART



R. B. G. van

2020.04.24

4

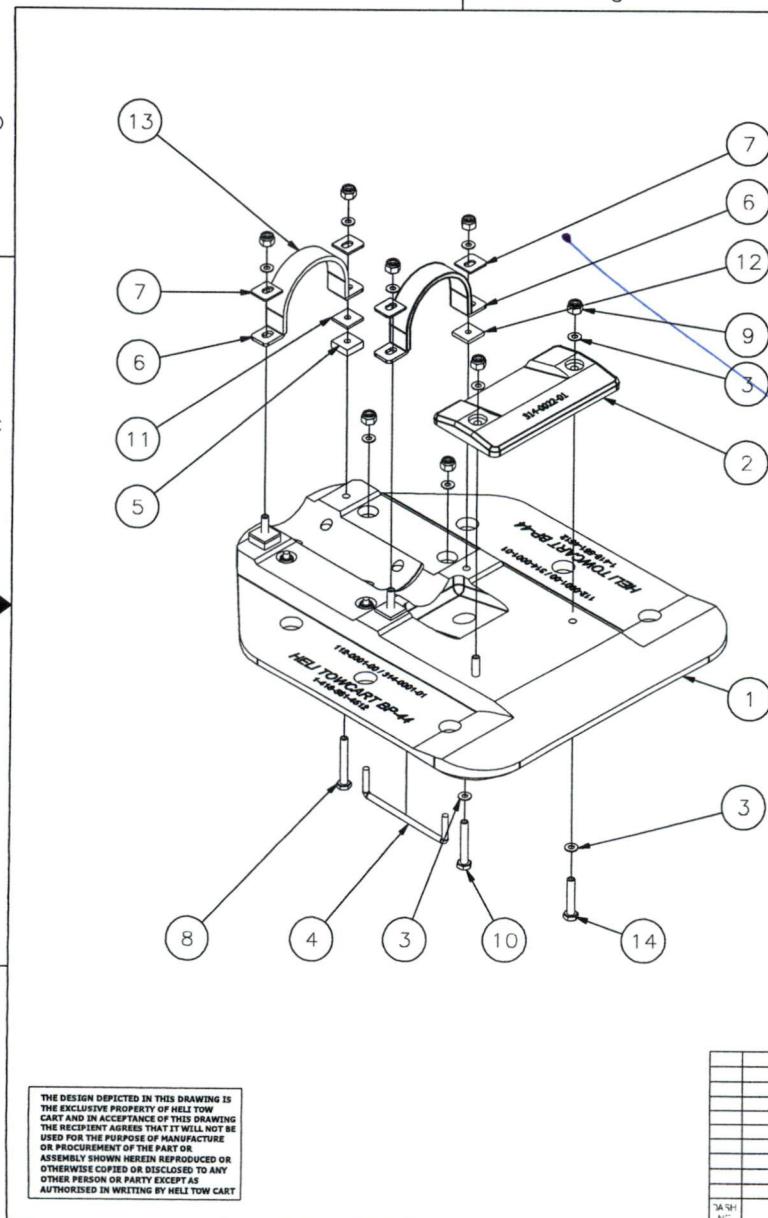
3

2

1

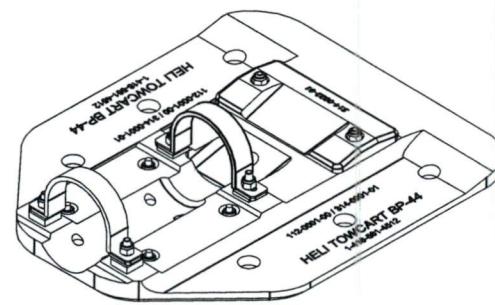
DRAWING NO. 112-0001-00-D

1 OF 1



## NOTE:

- ICEBLADE ASSEMBLY CAN BE OMITTED FROM INSTALLATION (OPTIONAL)
- FASTENERS LENGTH TO BE DETERMINED AT THE INSTALLATION

ISO  
SCALE 1 / 4

ITEM	QTY	PART NUMBER	DESCRIPTION	MAKER	SIZL
1	2	261 0004 17 A	BOLT AN4 13A	STEEL	1/4
2	2	314 0016 05 A	BEARPAW SLIRINK 1X5	RUBBER	
3	2	314 0015 01 A	BEARPAW FILLER BLOCK 1/8	UHMW	1/8
4	2	314 0014 01 A	BEARPAW FILLER BLOCK 3/32	UHMW	3/32
5	2	261 0002 17 A	BOLT AN4 15A	STEEL	1/4
6	10	262 0001 17 A	NUT MS20 365 428	STIFI	1/4
7	2	261 0003 17 A	BOLT AN4 16A	STEEL	1/4
8	4	314 0007 15 B	BEARPAW SLOTTED CLIP SUPPORT	STIFI	
9	2	314 0006 15 Y	BEARPAW U SHAPED CLIP	STEEL	
10	2	314 0012 01 A	BEARPAW FILLER BLOCK 1/4	UHMW	1/4
11	2	314 0005 15 A	BEARPAW ICE BLADE ASSEMBLY	STEEL	
12	16	263 0001 17 A	WASHER AN960 416	STEEL	1/4
13	1	314 0022 01 A	BEARPAW FILLER BLOCK REAR	UHMW	1/2
14	1	314 0001 01 B	BEARPAW PAD	UHMW	

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND ITS ACCEPTANCE OF THIS DRAWING BY THE CONTRACTOR AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY. IT IS NOT TO BE COPIED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART.	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. INCHES MM DEGREES ANGLE DEGREES ALL MACHINE SURFACES MATERIAL: MATERIAL SPEC: ITEM: ITEM WEIGHT: PROTECTION: IDENTIFYING METHOD:	DRAWN: S. BERNIER 2009-10-22 DESIGNED: S. BERNIER 2009-10-22 CHECKED: APPROVED: APPROVED: M. ZGF A 2009-10-22 APPROVED: M. ZGF A 2009-10-22 SCALE CODE: SIZE DRAWING NO. 112-0001-00-D
---	--	--

**OHELI**  
**TOW CART**  
**STREAMLINE ASSEMBLY**

2010.01.06